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Railway & Commercial Gazette

Vol. CCXLIII No. 6223 | LONDON, NOVEMBER 26, 1954 | PRICE 8d.

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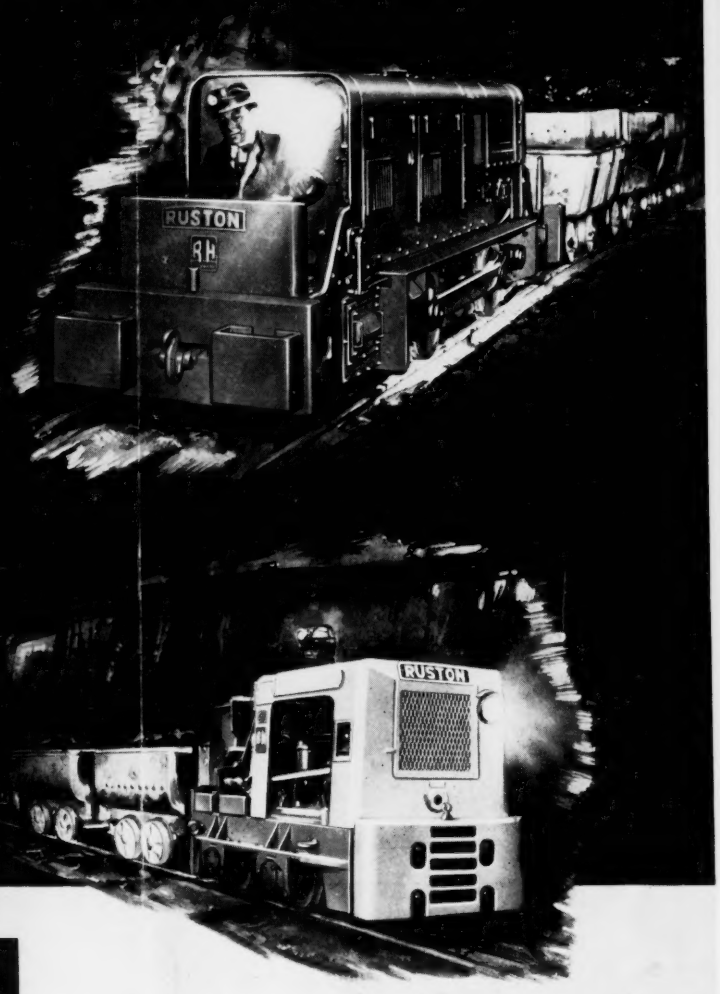

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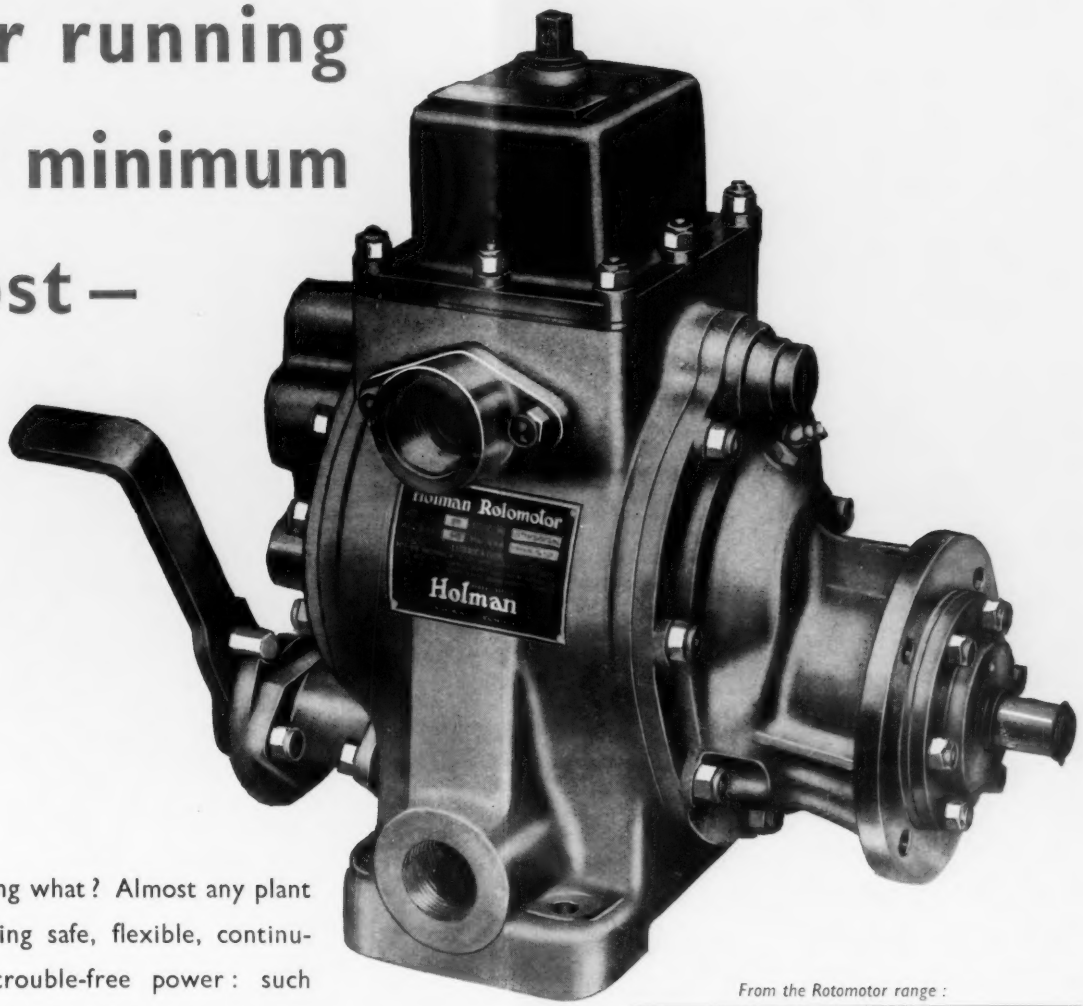

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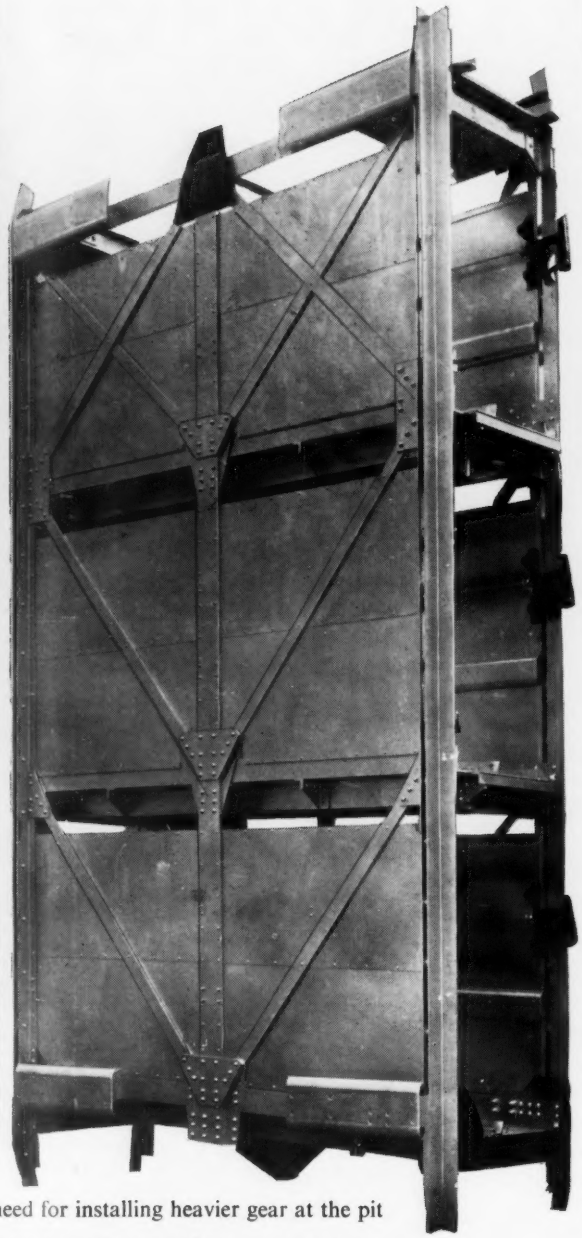

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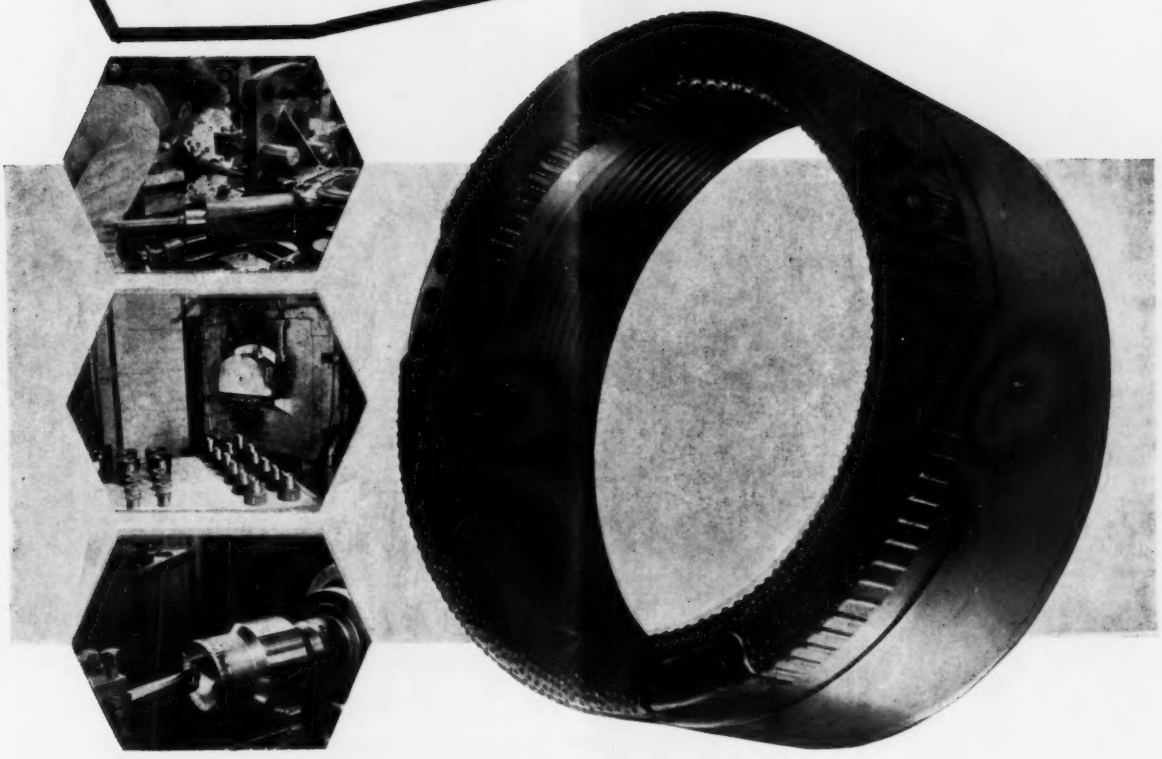

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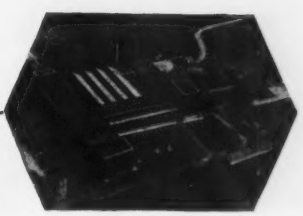

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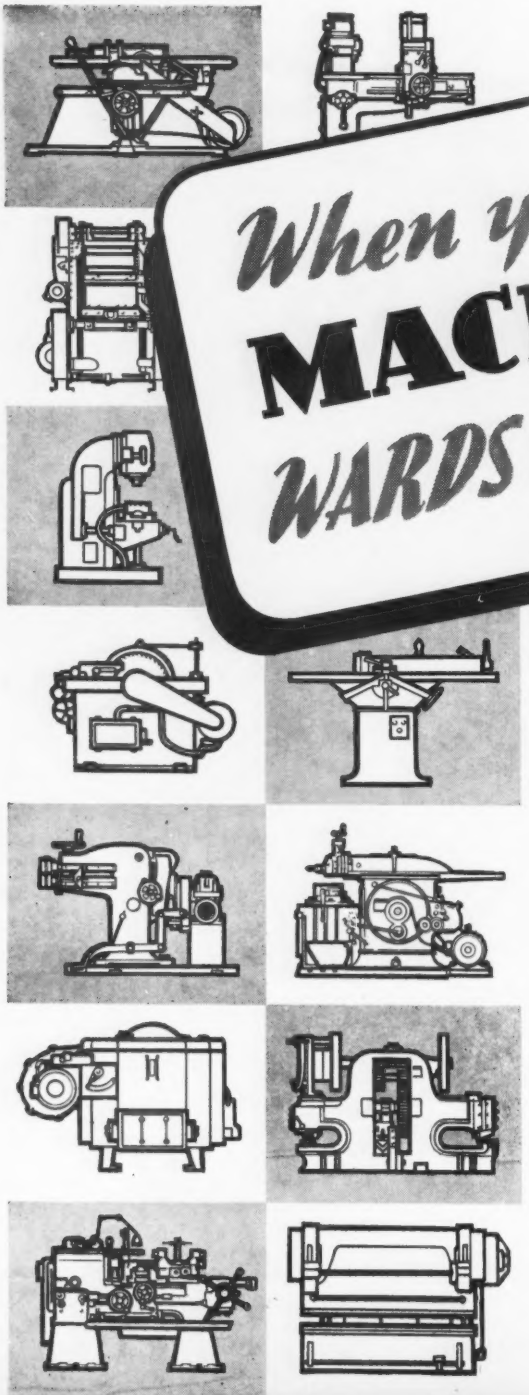

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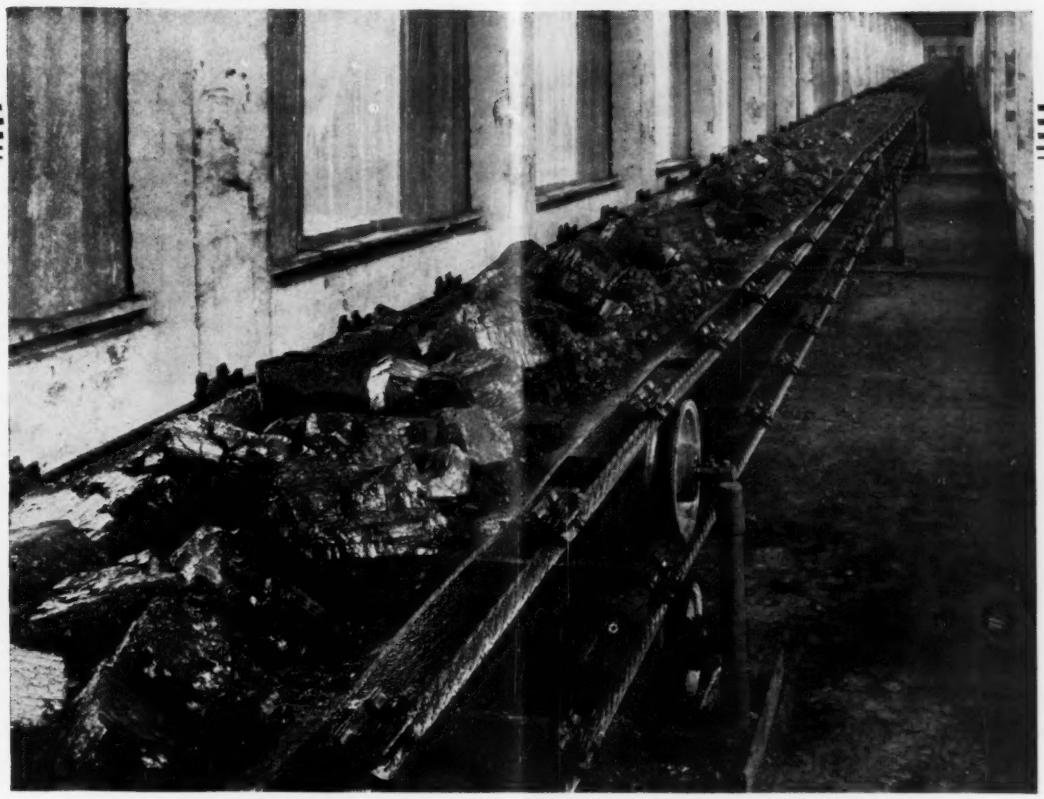

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Published by The Mining Journal Ltd., at 15 Wilson Street, Moorgate, London, E.C.2. MONarch 2567 Subscription £2 per annum

NOTES AND COMMENTS

Chile Devalues Again

The Chilean Government's latest juggle with exchange rates has had the effect of depreciating the peso against the U.S. dollar, while appreciating its value against the pound sterling. For the past year the peso has been officially 110 to the U.S. dollar while the pound has fluctuated freely and has recently been valued at 660 pesos. Now, official cross rates have been established with the U.S. dollar and the pound sterling has been revalued at 560 pesos.

The practical result of this new effective sterling-peso rate is likely to be small. The old rate represented the acute scarcity value of the pound and that scarcity is not likely to be much improved by making the pound actually less valuable. The scarcity of the pound will not end until Chile can acquire a better and more regular source of sterling earnings. The incentive for acquiring sterling and the other inconvertible European currencies in fact already exists because, in the present copper squeeze, small parcels of copper could certainly command a better price on the Continent than in the United States. But the plain fact is that the copper is not there to sell—at least not above ground. The scarcity of the pound, rather than any juggling with rates (unless the juggling becomes much more audacious than any yet contemplated) will continue to determine the volume of Anglo-Chilean trade.

The real significance of the change can be judged when it is realized that it is only a year ago since the peso rate for the U.S. dollar was raised from 31 to 110. The transition from 31 to 200 pesos (and that figure is itself unduly optimistic according to black market rates) has taken precisely 13 months. It is an excellent move, but at the same time not a particularly difficult one for Chile to have rationalized her exchange structure. What really matters is whether Chile can so organize her domestic economy as to justify the new rates.

There seems now to be no direct connection between the devaluation of the peso and the proposed new taxation laws for the copper companies. An official rate of 200 pesos should, however, make it quite impossible to maintain a penal rate of 19.37, and at the same time it is no doubt highly convenient to reorganize the chief means of acquiring revenue and foreign exchange simultaneously with the introduction of a completely new exchange structure. But there the connection ends. Copper taxation has, in fact, been under discussion for more than a year and it is probably only a coincidence that the proposals are being crystallized at a time when it has become impossible to maintain the peso at its present value.

Nevertheless, the copper companies have good grounds for anxiety. Imports from the United States are going to be more expensive for Chile and, as soon as this rise makes an impact on the domestic price level, there are going to be more demands for more pay. Whether Chile will use the opportunity provided by devaluation to pull up her socks or merely to pull herself up by her boot-straps only time will tell; but on past experience it has always been the latter and it has never taken a great deal of time to tell it.

Current Mining Trends in the S.A. Gold Industry

Broadly speaking, the South African gold mining industry is sounder in wind and limb than it has been for several years—a condition largely attributed to the easier supply position of both power and labour. For some months, generally higher production and profit figures have been reported and the industry's current rate of production is running close to the all time record output of 14,000,000 oz. attained in 1941.

Yet the crucial role played in the establishment of this favourable trend by the mechanization of the means of production and by the introduction of new operating and constructional techniques tends to be overlooked. The explanation is not far to seek. The steady stream of information released by the companies in their monthly, quarterly and annual reports can be compiled, collated and presented

in an easily assimilable form as, indeed, is effected in our own cumulative and comparative quarterly tables which enables a close watch to be kept on the progress of the industry as a whole or on any one of its parts.

On the other hand, there is not—nor can there be—periodical releases of information highlighting the technical progress of the various mining companies comparable to the statistical data issued relating to production and profits.

Because the rallying points of the industry centre around the newer mines in the Orange Free State, on the Far West Rand and on those mines also producing uranium as well as gold, we have arranged for a series of eight specially contributed articles from a South African correspondent which will describe the current technical position in at least one of the younger mines belonging to the main South African mining groups.

Thus, current mining practice at West Driefontein Gold Mining Company in the Consolidated Gold Fields Group is described on another page and this will be followed by seven further articles describing mining methods at present prevailing at Harmony Gold Mining in the Central Mining Group, St. Helena in the Union Corporation Group, West Rand Consolidated in the General Mining Group, Stilfontein as representing the former Strathmore Consolidated Group, Freddies Consolidated of the "Johnnies" Group, and there also will be one article on the various developing mines in the Anglo American Corporation of South Africa Group.

Thoughts on the state of the Mining Profession

The annual dinner of the Royal School of Mines Association was held in London last Tuesday in the mellowed surroundings of the Tallow Chandlers Hall, a most agreeable venue which is fast achieving a tradition and popularity of its own among members of the Association.

As is perhaps only natural at such a gathering, the after dinner speeches contained several references to the problems of the recruitment training and status of the metal mining engineer. Thus, in proposing the health of the Association, Brigadier R. S. G. Stokes, President of the Institution of Mining and Metallurgy, suggested *à propos* recruitment that he saw no waning in the spirit of adventure, which had animated past generations of mining engineers, nor did he believe that the large earnings being made by miners on some fields was drawing off men into the lower strata of the industry, who might otherwise seek to become professionally qualified. Turning to the question of University curricula, he referred to the somewhat divided views, which persisted on this matter, in particular with regard to the desirability of including a course on training for management. He made it clear that he regarded skill in man management as being inherent in the mining engineer's craft, and that he feared that undue emphasis on managerial aptitudes might lead to a separation of the technical mining and the managerial functions, which might in turn lead to the development of a separate class of managerially skilled executives who were technically inexperienced.

In replying to the toast of the Association, the president, Mr. J. B. Richardson, touched on the status of the mining engineer. He felt, as he put it, that the profession tended to get a bad press.

As all these matters were only referred to *en passant* in two typically witty and provocative speeches, such as we have come to associate with this annual occasion, it would perhaps be wrong to read too much into them. On the other hand this is one of the few occasions in the year when the profession does take a look at itself, in more or less serious vein, and we may therefore be permitted to consider for a moment the foregoing points, each of which have an important bearing on the problem of recruitment into the mining industry, which to-day is causing concern to so many people.

It is patently true, as Brigadier Stokes asserted, that there is no lack of the spirit of adventure in those entering the mining profession. Indeed it is difficult to visualize a young man entering the profession without this vital spark. What, however, appears to us considerably less certain is whether the youth of to-day is fired with the spirit of adventure in sufficient numbers to meet the requirements of the mining industry along with those from other walks of life in which qualities of independence and leadership are prerequisite. It has, we believe, been the experience of those, who have recently concerned themselves with the recruitment of potential mining engineers, that an attitude of safety first coupled with the desire to "have it soft" for their children is now widespread among middle-class parents, and it would almost appear as if the growth of a welfare state mentality coupled with conditions of full employment is threatening to deprive Britain of her more venturesome young men.

On the question of training for management, we believe that this issue is not one of "mining engineers" versus "managers" but rather that under present day conditions the know-how of good management has to a considerable extent been codified, and proved methods have been developed of imparting this information so that men (whether born managers or not) can be taught—and taught quickly—to become better managers than they would be if left to arrive at the principles of good management by trial and error through their own unaided efforts.

Beyond this the question arises of the stage at which management training should be given. So far as we are aware, it is not being seriously suggested that management should be added to the degree course. In the first place there is no room for it in an already crowded syllabus, and secondly the undergraduate with no practical experience of the mining industry behind him would not be in a position to benefit from such studies. As we see it, the questions at issue are those of the stage or stages in his post-graduate career at which the mining engineer might usefully receive training in management and of where the facilities should be provided.

From the angle of recruitment, the point made by Mr. Richardson, is, of course, of paramount importance, although we are inclined to think that the mining engineer does not suffer so much from getting a bad press as he does from getting practically no press notice at all, outside of the specialist technical journals serving his interests. This is bound to be a severe initial handicap when it comes to interesting schoolboys in a mining career, and, as was pointed out in our issue of November 12, it is precisely this problem of helping schoolboys, parents and masters to visualize the realities of the life of the British overseas mining engineer, to which the Anglo American Corporation will be devoting special attention in its forthcoming recruitment campaign.

Generally speaking we have found it to be true that when any responsible section of the community finds itself misrepresented or overlooked in the press, the cause can be attributed to a failure of public relations, and it may well be that many problems affecting the British overseas mining industry (not only as regards recruitment, but also in such matters as inequitable tax laws) might be greatly assisted by an expertly organized public relations programme, aimed at interpreting to the press, and more particularly to the popular press, the part which the industry is playing in the nation's economy and the difficulties which it is encountering in playing this part efficiently.

Uranium on the Colorado Plateau

The Colorado Plateau is the largest source of uranium in the United States and is assumed to be one of the largest potential uranium producing areas in the world. The development of the uranium search in the district has promoted a marked boom in mining activity, and investment has reached a scale scarcely surpassed on any mining field previously worked. The following article, from our Western United States correspondent, presents a précis of the prospects, economic aspects, and geological formation of the Colorado Plateau, and serves as an interesting addition to the article appearing in *The Mining Journal* of September 17, 1954, which dealt particularly with drilling practice on this uranium field.

The rapid development of uranium search and mining in the Colorado Plateau region has been characterized as a marked mining boom. Few, if any, localities have seen money poured into a new industry on so large a scale, for example, Atlas Corporation's purchase (verified) of the Pick properties for $9,000,000, extensive development by firms of such calibre as Anaconda and Homestake, and drill holes aggregating millions of feet. Shipping properties exceed 550 with an unknown number under development.

A consideration of the evidence at hand is encouraging to the belief that a long range programme may be expected. While the Atomic Energy Commission will not release any information as to its anticipated demand for uranium, it is noted that the domestic buying programme, orginally established in 1948, has been modified four times either by liberalizing the purchase rates or extending the period, which now runs until 1962, nor need this be considered as necessarily a final date.

A.E.C. has a construction programme on hand which will not be in full operation until 1959. With plants already constructed this will involve an investment of $9,000,000,000. It is not to be expected that A.E.C. would initiate a programme of such magnitude if it expected to terminate or modify it materially three years after its completion. Large scale investors in the Plateau region include outstanding firms that have been successful in varied lines.

Progress has been made in the field of commercial possibilities. Already the U.S. Navy has built an atomic powered submarine and a carrier is on the drafting boards. Large sums have been spent in private research and recently Mr. F. K. McCune, General Manager of the Atomics Products Division of the General Electric Co., expressed the belief that the electric companies of the country will be operating a number of full-scale atomic powered generating plants within the next ten years and that by that time they will be able to supply electricity on a competitive basis. As a side light General Electric's Atomic Products Division embraces 12,000 employees and G.E. is only one of many carrying on such research.

The Colorado Plateau is by far the largest source of uranium in the United States and is supposed to be next to the largest in the world. From the evidence, circumstantial it is true, it is reasonable to expect that its activity will continue for many years and as commercial application is improved the end is hardly foreseeable.

THE PRICE FACTOR

Development has been encouraged by the liberal prices established by A.E.C. which are supplemented by allowances and bonuses. Prices are graduated according to the grade of the ore. The lowest grade acceptable is 0.1 per cent (2-lb. per ton) U_3O_8, which receives a base price of $1.50 per lb. or $3 per ton. If one is so fortunate as to have a one per cent ore he receives a base price of $70 per ton ($3.50 per lb.) and a premium for high grade that brings the total to $84.50.

Then there are bonuses to offset the cost of development and for the first 10,000 lb. of production. These prices are as delivered at the processing plant so an allowance of 6 c. per ton mile is made for haulage. If a one per cent ore is entitled to the bonus for initial production it will realize $164.50 per ton at the mill plus the allowance for haulage. Payment is also made at a much reduced rate for vanadium, contained in the ore.

GEOLOGY OF THE DEPOSITS

Uranium deposits have been found throughout a series of sedimentary rocks ranging in age from Permian to Eocene and consisting of conglomerate, shale, mudstone and sandstone with some limestone showing in the Eocene member. The most important producers are the Salt Wash member, 200 ft. to 400 ft. thick, of the Morrison formation in the Upper Jurassic and the Triassic Shinarump formation which is up to 100 ft. thick. The Salt Wash consists of sandstone and mudstone and the Shinarump of sandstone and conglomerate. The Chinle, 100 ft. to 500 ft. of sandstone and shale, lying above the Shinarump in the Triassic is also a producer.

The origin of the ores is a moot point, both syngenetic and epigenetic theories being advanced. Advocates of the syngenetic theory call attention to the fact that the deposits occur in fluviatile rocks with scarcely an exception, there being only a few localities showing deposits in aeolian or marine strata. The mineralized sandstones are micaceous or arkosic, indicating an igneous origin. Plant remains have played an important part in localizing much of the ore and high grade deposits have been found associated with fossilized wood. The theory is that the streams which carried the sediments that were consolidated into the host rocks carried uranium, presumably in solution, and the composition of the sediments was favourable to precipitation of the mineral from the solution. As tending to substantiate such a theory it is pointed out that in some cases deposits can be traced along what appears to be the course of an ancient stream bed.

One writer, in expounding the syngenetic theory, says "Such (favourable) area would include all the Tertiary basins of the Western states."

The proponents of the epigenetic theory point out that the Colorado Plateau is a great dome and that scattered areas of igneous rocks indicate that the doming was caused by a batholithic intrusion. On this dome are numerous minor structural features, such as lesser domes, anticlines, faults and joints. Thus channels were formed for the magmatic waters ascending from the batholith and stress is laid on the fact that the normal occurrence of the ore is in a porous formation which is overlain by a stratum of shale or relatively impervious limestone. A definite relation is postulated between the orebodies and the structural features.

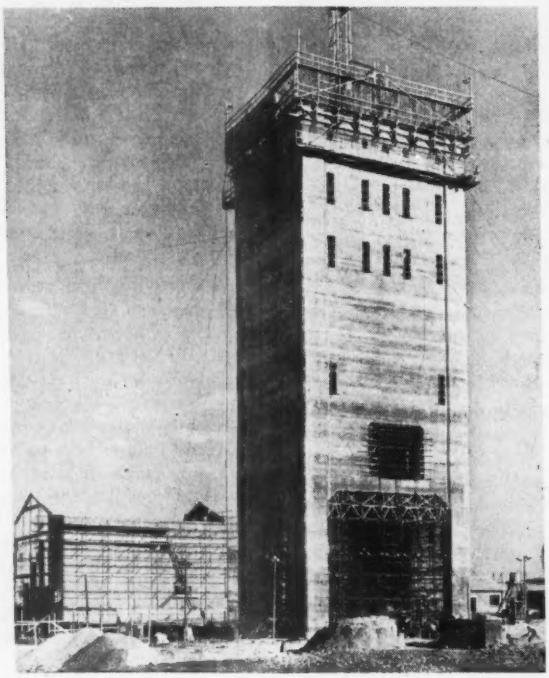
Mining is by both underground methods and open pit and on almost every scale imaginable. Operators may be a two man partnership or a corporation such as Anaconda or V.C.A.; loading by hand or power shovel; mining by hand or compressed air; haulage by wheelbarrow or the most improved rubber tyred trackless equipment. An orebody may be a mere pocket or 20 ft., as on the MiVida, or more wide. Mining methods vary accordingly.

S.A. MINING TRENDS—I

Current Mining Practice at West Driefontein

West Driefontein Gold Mining Company, the rich West Wits line gold-uranium producer in the Consolidated Gold Fields Group, was incorporated in South Africa in March, 1945, and came into production at the beginning of February, 1952. In the following article, which has been specially contributed to the *The Mining Journal* by a South African correspondent, a description of West Drie's interesting five shaft system prefaces a general survey of the mine's current development operations and mining practices and concludes with a brief appraisal of the company's reduction and uranium plants. As mentioned under "Notes and Comments," this article is the first of a series of eight which will describe the mining methods current in at least one mine in each of the chief South African groups.

The West Driefontein lease area is located on the foothills of the Gatsrand (" ridge of holes "). The name was derived from the subsidences or " sink-holes " and caverns on the surface. The former were caused by the settlement of dolomite formations at depth over leached-out fissures and caves, while the latter, the surface caverns, resulted from the leaching of outcropping dolomite. In places the quartzite normally overlying the dolomite has not been eroded away and forms cappings that constitute the foothills. The unstable conditions thus represented in the surface and subsurface dolomite largely determined the selection of West Driefontein's concrete-lined circular shafts except in the case of the No. 2 shaft which is elliptical but also concrete-lined. Shafts of this design are considered to be relatively cheaper to sink, to have stronger walls, and to promote a relatively greater ventilation flow.



The unique headframe housing the Koepe winders at No. 5 shaft

SHAFT SYSTEM

Shafts 1, 3 and 4 are vertical circular 22 ft. 1 in. dia. units. All have four main compartments, two equipped with single-deck man-cages, and two with 4½-ton skips interchangeable with double-deck man-cages. Service columns are carried in the skip compartments and ventilation pipes are accommodated in the space provided for a service compartment. The hoisting capacity of each shaft is understood to be about 50,000 tons a month.

No. 1 Shaft serves the Carbon Leader Reef horizon in the sub-outcrop zone of the western section, as does the No. 2 Shaft which has been connected with No. 1 Shaft. Shaft No. 3 serves the central section of the sub-outcrop zone and had been sunk to a depth of 3,093 ft. by September 30, 1954. In due course, the Carbon Leader and later possibly the Ventersdorp Contact reefs will be opened up from this shaft.

Sinking operations in the No. 3 Shaft have passed out of the dolomite formations, where extremely difficult conditions were encountered, and are now in progress in quartzites of the Upper Witwatersrand System. A faster sinking rate can therefore be expected. If operations proceed normally, the Carbon Leader Reef should be intersected early in 1955 and the shaft should be commissioned for hoisting in the latter part of 1956. Shaft No. 4 is located in the sub-outcrop zone of the eastern section and preparations for the resumption of sinking, suspended at 61 ft., are in progress. This shaft will serve to open up the Carbon Leader Reef and subsequently will probably serve the Main and Ventersdorp Contact Reefs.

The distance between Nos. 1 and 2 Shafts is 3,000 ft., which is close enough in effect to constitute twin-shafts. The distance between Nos. 2 and 3 Shafts is about 5,700 ft., and that between Nos. 3 and 4 about 9,800 ft. The axes of the No. 2 vertical, concrete-lined, elliptical shaft are 33 ft. 1 in. and 10 ft. 7 in. This shaft has four main compartments, two equipped with 10-ton skips and two with double-deck man-cages interchangeable with skips and in addition carrying the service columns. The ventilation pipes are accommodated in the two ends where provision has also been made for two service compartments. The hoisting capacity of the No. 2 Shaft is 90,000 tons a month.

The No. 5 Shaft, now being sunk, is located on the assumed position of the sub-outcrop of the Ventersdorp Contact Reef about 5,000 ft. to the south of No. 2 Shaft. No. 5 Shaft will serve the deeper levels of the Carbon Leader Reef in the western section and will open up the Ventersdorp Contact Reef. This shaft will be a vertical, circular 25 ft. dia. shaft with a projected final depth of about 5,500 ft. and will hoist from 5,200 ft. in a single stage. The hoisting capacity will be about 180,000 tons a month. Sinking the No. 5 Shaft was suspended at 120 ft. in order to facilitate the completion of surface installations. Sinking should be resumed early next year.

DEVELOPMENT AND MINING

The headframe will be unique in South African mining practice. Constructed of reinforced concrete, it will be 206 ft. high with a chamber at the top housing two Koepe winders. One of these will hoist in the service compartment with the " counter-weight " designed as an inspection and servicing cage. The other Koepe winder will serve two main compartments equipped with 15-ton drop-bottom skips, one skip counter-balancing the other. The other two main compartments will be equipped with cages hoisted by a conventional double-drum winder installed on the shaft-bank. The hoisted ore and waste rock will be dropped into separate surge bins housed in the headframe, whence two conveyor belts will transfer the loads respectively to an ore-bin and the waste dump.

The lease area of 4,769.45 claims is underlain by three reef horizons, the strike of the Main and Carbon Leader Reefs conforming approximately with the northern boundary and runs roughly, east to west. The strike of the sub-outcrop of the Ventersdorp Contact Reef conforms approximately with the northeast/southwest diagonal of the rectangularly shaped lease area. The formations dip from 20 to 25 deg., southwards in the case of the Main and Carbon Leader Reefs, and southeastwards in the case of the Ventersdorp Contact Reef.

At present, operations are confined to the Carbon Leader Reef in the area surrounding the Nos. 1 and 2 Shafts. The orebody is being opened up by means of footwall haulages advanced on the respective levels. From these haulages footwall crosscuts are taken back to the reef and the reef drives are then cut, drilling, blasting and cleaning being effected by a composite shift crew. The drag round is used throughout and is drilled by jackhammers, operated with airlegs from drilling-platforms mounted on a bogey and from the "floor." All the equipment is carried on a service trailer linked with and hauled by the platform-car. The ends are cleaned by mechanical loaders discharging into 4-ton drop-bottom cars drawn by 34 h.p. diesel locomotives on 24 in. gauge tracks.

Reef raises are cut at regular intervals on strike from the reef drives on the respective levels, and subsequently the intermediate reef drives are advanced from the raises. The stopes are cleaned by mechanical scrapers discharging into cars which are trammed on the intermediate levels to boxes leading down to footwall crosscuts. From this point the loaded cars are hauled via the haulages to the shaft pass-system.

REDUCTION AND URANIUM PLANTS

The very great proportion of the gold, and probably uranium, in the Carbon Leader Reef is carried in a friable, carbon-rich layer of less than a finger's breadth on the footwall contact. Nevertheless, in the ore reserves estimated at June 30, 1954, the practical stoping width, as determined by conditions in the mine, was returned as 42 in. The overall width of the Carbon Leader Reef ranges from 2 in. or 3 in. to about 17 in. It is, therefore, obvious that the bulk of the ore hoisted and treated in the reduction plant is waste rock.

Operating economics dictate whether the proportion of this waste rock should be reduced. Recent trends have indicated that it should, and the high costs involved in the processes of uranium extraction have accentuated the impact of these trends. In order to follow the line indicated by these trends, West Driefontein mine is to take advantage of the friable characteristic of the enriched layer. This layer is readily loosened in transit underground through passes and by the primary jaw crushers on the surface; and thorough investigation has shown that the more finely divided ore (which includes the layer already mentioned) contains practically all the gold and probably the uranium as well. By the simple method of screening, probably following the primary crushing, it is possible to separate the high-grade fines from the coarse low-grade fraction. The relatively small quantity of gold-bearing ore in the latter can readily be sorted or picked by hand on belts.

This intensive method of sorting results, of course, in a marked benefication of the grade of ore to be treated. The tonnage will naturally be reduced and the overall costs in terms of tons milled will be increased. However, the recovery or yield will be raised and the costs in terms of yields reduced.

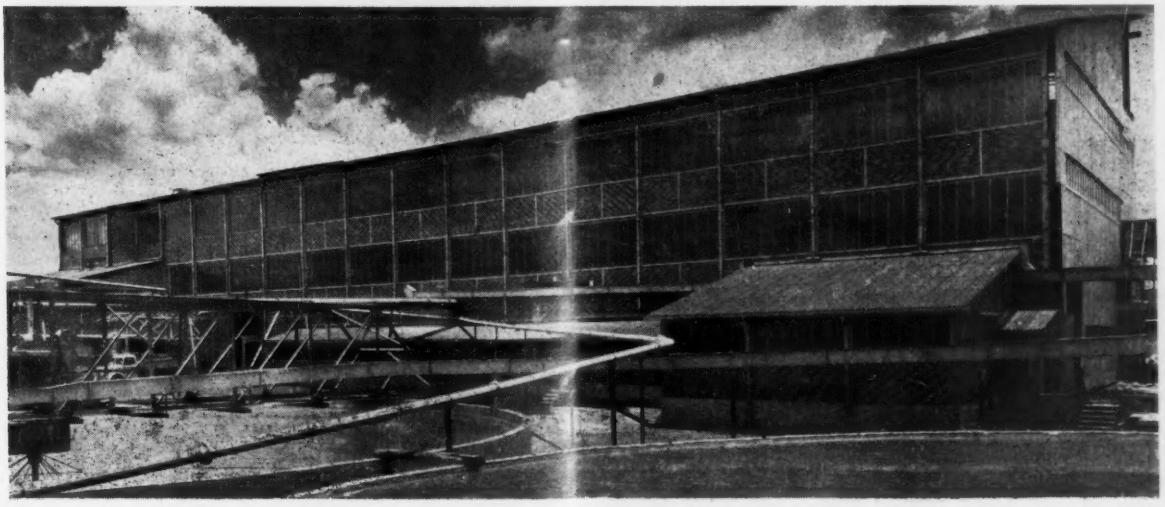
Erection of the uranium plant was started in the second quarter of 1954. This plant will also treat the residual slimes pumped from the Doornfontein mine adjoining the western boundary of the Blyvooruitzicht property.

THE REDUCTION PLANT

The layout of the reduction plant is typical of Gold Fields practice. Except for the thickeners, Browns tanks and clarifiers, the main units are housed in a single building. Compactness, more efficient supervision, economy in labour and capital expenditure are claimed as arising from the layout.

The mill is designed on a unit basis, each unit consisting of a primary ball mill (using the standard steel ball of 4 in. dia.) in closed circuit with a simplex spiral classifier. The secondary circuit incorporates two pebble mills each in closed circuit with a duplex spiral classifier and with corduroy tables. The nominal capacity of each unit is about 22,000 tons a month. Three units have already been installed, and the installation of the fourth is progressing.

The reduction plant is located at the No. 2 Shaft. Ore hoisted up this shaft is tipped into the headgear bin at the base of the headframe, whence it is drawn and conveyed to the reduction plant. Ore from the No. 1 Shaft is hauled on surface on tracks of standard S.A. Railways gauge (42 in.) in 40-ton hoppers drawn by electric loco to a 1,500-ton transfer bin in the immediate vicinity of the No. 2 Shaft.



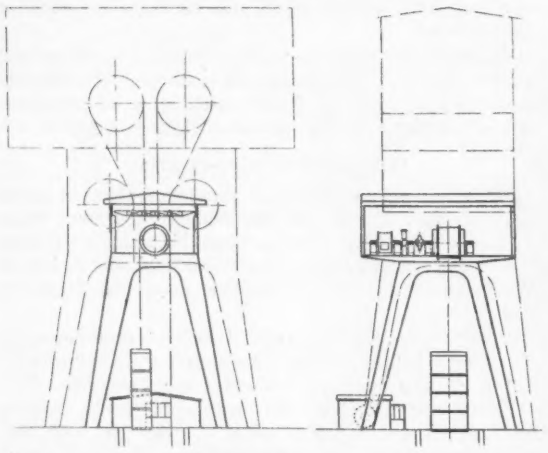
A general view of the reduction works, which is near the No. 2 shaft

WINDING—I

Modern Trends in Winding Technique

The following article is the condensation of a paper by A. W. Kidd, B.Sc., M.I.Mech.E., M.I.E.E., M.I.Min.E., and H. M. Hughes, M.A., A.M.I.Mech.E., A.M.I.E.E., respectively divisional chief engineer and assistant to D.C.E. of the S.W. Division, N.C.B., which was presented at the general meeting of the South Wales Institute of Engineers on November 8, 1954. The paper describes changes in thought which are now taking place in regard to winding technique and sets forth what appears to be the general lines of prospective development. The first part of the article, appearing below, deals particularly with winding equipment and ropes, while a concluding instalment will discuss shaft design and cages, and will make further mention of winding engines. Although the background to these observations are more concerned with the coal mining industry, the recent application of such equipments as Koepe winders to metalliferous mining imparts a much wider appeal to the article.

From about 1950 much thought has been given to winding problems, chiefly because of the number of large-scale new sinkings required and also because of the considerable number of old pits which require modernizing and electrifying.



Comparison of twin winder Koepe installation with possible single friction multi-rope winder for same output

The German development[1] of the Koepe winder has been considered for many schemes and has been adopted in one or two dozen cases in this country. This winder employs a single rope passing over a pulley, with a balance rope between the bottom of the two conveyances. The drive is transmitted by the friction between the rope and the Koepe wheel, which may be mounted on the ground adjacent to the headgear or in a tower over the shaft, and the chief advantage of the Koepe system is the reduction in the moment of inertia of the pulley when compared with a conventional drum winder.

Koepe winding has called for considerable development in brake engines. British practice was to make the brake shoe movement proportional to the driver's lever movement; consequently, the braking torque for any position of the driver's lever was dependent on wear. Thus, making the braking torque proportional to the driver's lever movement constitutes a fundamental change. Apart from Koepe winding, the recent chief development has been in the trend towards making the geared A.C. cylindrical drum winders suitable for automatic control[2]. The development of closed loop control in conjunction with dynamic braking has been pursued.

THE GENERAL PROBLEM

The basic problem in the selection of a winding installation is to choose the most suitable plant for the intended duty that will at the same time show the minimum combination of capital and running costs. The major factors involved are: the outputs required, the depth or depths from which the outputs are to be obtained, the type of conveyance, the manriding duty, the loads per conveyance.

It remains to be shown whether skips produce more breakage than cage winding. Common observation would indicate that this is the case and recent work by the Scientific Department, South-Western Division, N.C.B., showed in a particular case with anthracite that there was an increase of two per cent of $-\frac{3}{16}$ in. coal with a skip over that with cages. This produced a loss in realization of ¼d. per ton. This loss was not greater since the +5 in. coal was also broken down into the more profitable middle sizes. However, when the effect of skip winding was added to mechanical crushing of the +5 in. coal, the loss in realization increased to between 4½d. and 11½d. per ton.

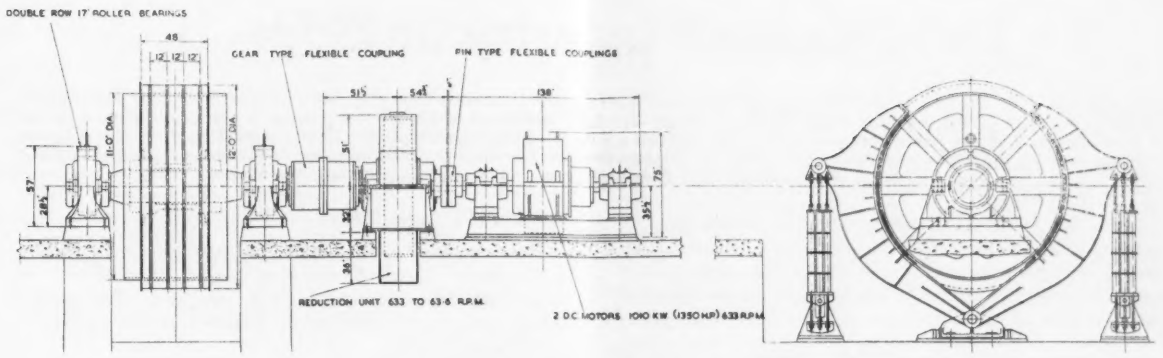
The practice of the last few years does not approach the ideal. For instance, the general use of winding enginemen is to be deprecated on grounds of safety as well as on those of humanitarianism and of economy. In Sweden, where there are fully automatic and push-button automatic winders in use, greater safety is felt in an automatic winder, and shaft accidents are almost unknown.

Reverse bending of the rope takes place both with drum winders and with Koepe pulleys. It would be better for this to be eliminated in the interest of rope life and safety.

THE FRICTION WINDER

It is evident that the tower-mounted Koepe winder with its reduced moment of inertia and absence of rope angling was a step in the right direction. If the wheel diameter

The Kiruna mine hoist in Sweden is pushbutton operated and the ropes support a total weight of 120 tons


DOUBLE ROW 17" ROLLER BEARINGS
GEAR TYPE FLEXIBLE COUPLING
PIN TYPE FLEXIBLE COUPLINGS
REDUCTION UNIT 633 TO 63·6 R.P.M.
2 D.C. MOTORS 1010 KW (1350 H.P.) 633 R.P.M.

General arrangement of friction hoist

could be reduced to a half or even less, the advantage would become more marked and the logical step is to use several ropes in parallel to permit this reduction. This single decision to use multi-ropes gives rise to the new conception of the friction winder and is the major development of recent years in the technique of winding.

Once it has been decided to use more than one rope there is no limit to the number that may be employed provided suitable clearance is allowed between adjacent ropes. Nor need the number necessarily be even. Therefore, even with a large installation, the load per rope can be brought within the limits necessary to enable quite small ropes to be used, say 1 in. or 1¼ in. dia., with pulley dia. of the order of 7 ft. to 10 ft. Furthermore, with tower-mounted winders the guide pulleys can in many cases be eliminated by arranging the pulley dia. to suit the conveyance centres, thus avoiding reverse bending of the ropes. Moreover, the tower structure now becomes reasonable in size and cost.

As the friction pulley dia. may be less than half that of a Koepe wheel the speed of revolution is at least doubled. This in itself leads to a considerable reduction in driving motor dimensions and cost, even with direct-coupled drives.

WINDING ROPES

It is evident that with an even number of ropes it is possible to neutralize twist by having half right-hand and half left-hand lay; further, with an odd number of ropes, some of the twist can still be overcome. In general locked coil ropes are recommended for all major multi-rope friction winders and stranded ropes should only be used on small winders where the rope size is too small for the locked coil type—say below ¾ in. dia. The practice abroad of using stranded ropes is probably due to the fact that the countries concerned do not manufacture locked coil ropes and there is no reason why this practice should be followed.

In the matter of bending ratio a guide is given by the body of accumulated experience including that of the rope manufacturers. Where there is no reverse bending the duty on the rope is eased and lower ratios can be considered. It would also seem reasonable to expect that lower bending ratios can be used with small ropes than with large ones and it is against common experience to expect, say, a 2 in. dia, rope to bend as well as a 1 in. rope. It is suggested therefore that the following ratios be adopted :

ROPE BENDING RATIO

	Stranded		*Locked coil*	
Rope Size	*No reverse bending*	*Reverse bending*	*No reverse bending*	*Reverse bending*
Up to 1¼ in. dia. ...	70/1	80/1	85/1	95/1
From 1¼ in. to 1¾ in. dia.	80/1	90/1	95/1	105/1
Above 1¾ in. dia. ...	85/1	95/1	100/1	110/1

It is reasonable to expect greater overall safety with multiple ropes than with a single rope providing the loads are equally shared, because a greater proportion of the total number of wires in the ropes are exposed to view and also because it is unlikely that more than one rope would break at a particular instant due to, say, fatigue or corrosion.

In general, two considerations govern the choice of safety factor. These are, the fatigue of the rope during normal winding, and the greatest shock stress to which the rope might be subjected.

In the case of conventional winders without balance ropes, it is now generally accepted that the static factor of safety can be reduced with increasing depths. Firstly, the greater depth means a less number of winds per year so that the fatigue of the rope is reduced and, secondly, all shock-stress waves transmitted through the rope are increasingly reduced by internal friction as rope length increases; further, as the depth reduces, the static factor of safety rises, so that safe figures are reached as the cage ascends the shaft. In the case of a friction drum winder, a balance rope is a necessity.

ROPE STATIC FACTOR OF SAFETY FOR FRICTION WINDERS

	Reverse bending		*No reverse bend*	
Number of Ropes	*Men*	*Material*	*Men*	*Material*
One rope	9.5	7.5	9	7.25
Up to three ropes ...	9.25	7.25	8.75	7
Four ropes or more ...	9	7	8.5	6.75

These statistics are subject to a reduction of 0.0005× depth in yards. At a depth of 850 yd. this would give a static factor of safety of 6.325 for the greatest mineral load with four ropes if there is no reverse bending.

TREAD PRESSURE

Tread pressure is important as it may be one of the limiting factors in determining main pulley diameters. It is suggested that a tread pressure of 400 lb. per sq. in. would be a satisfactory ceiling until more experience is gained.

As ropes are stationary relative to each other in the vertical direction, any slight low-velocity bumping or touching during a wind should be innocuous. Therefore there is no need to employ very wide rope spacing; on the contrary it should be kept as small as possible, as this will facilitate the design of a light yet strong friction drum. Even with shafts of 1,000 yd. depth a spacing of more than 12 in. should not normally be necessary.

REFERENCES

1. *Technical Report on the Ruhr Coalfield*, Vol. 1, 39, Lond. H.M.S.O. 1946.
2. *A. C. Winding at Lynemouth*, Col. Eng. 1953, 30, 503.

The Diamond Industry in 1953—II

In *The Mining Journal* of November 19, 1954, the first portion of this article discussed the diamond trade during 1953 in South Africa and dealt at length on the activities of the De Beers group. The final instalment which follows presents a précis of diamond output in other countries of the world during the same period. The article is an abridgment of the 29th Annual Report of the diamond industry covering 1953, produced by the publishers of *The Jewelers' Circular Keystone*, and prepared by G. Switzer, associate curator in the Division of Mineralogy and Petrology of the Smithsonian Institution, Washington.

In so far as diamond producing areas of the world—other than the Union of South Africa—are concerned, the Belgian Congo continues the world's largest producer in terms of quantity, although the territory ranks second to South Africa in value.

AFRICAN TERRITORIES

Belgian Congo. Production from this area is approximately 96 per cent industrial grade and about three-fourths of the world's supply of crushing bort comes from here. Production in 1953 was 12,580,256 ct. Production by companies was :

Company	*Carats*	*Value*
Kasai Area		£
Forminiere	374,185	615,000
Societies de l'EKL	150,014	246,000
Sté Minière Bécéka	39,859	66,000
Lubilash Area		
S.M. Bécéka	12,016,198	5,231,000
	12,580,256	6,158,000

Sierra Leone. In 1953, about 68 per cent of the total production was industrial grade.

Diamond mining in Sierra Leone is done exclusively by Sierra Leone Selection Trust Ltd., a subsidiary of Consolidated African Selection Trust Ltd. Total production for 1953 was 472,934 ct.

French Equatorial Africa. Total diamond production in French Equatorial Africa during 1953 amounted to 140,144 ct. The principal producing companies, and their productions were :

Company	*Carats*
Compagnié Minière de l'Oubanghi Oriental ...	63,185
Societe de Recherches et d'Exploitation Diamantiferes	8,049
Societe Minière Intercoloniale	31,656
Compagnié Minière de Carnot	12,000*
Societe Minière de l'Est-Oubanghi	10,000*

* *Estimated.*

French West Africa. Total production in French West Africa was approximately 180,000 ct., of which about 66 per cent is industrial grade.

Principal mining companies and their production during 1953 were : Societe Guinéenone de Recherches et d'Exploitations minières 41,653 ct. and Societe de Recherches et d'Explotations Minières en Côte d'Ivoire 100,000 ct.

Gold Coast. Company production in 1953 was 84 per cent industrial, 16 per cent gem, while over-all production (company plus native) averaged 70 per cent industrial, 30 per cent gem. Production was 2,167,364 ct., of which Consolidated African Selection Trust produced 836,713 ct., other European companies produced 80,716 ct., and African producers 1,249,935 ct.

Angola-Portuguese West Africa. Production in 1953 was 729,377 ct., and was divided among the three groups of mines at Cassanguídi 158,606 ct., Andrada 298,012 ct., Malúdi 271,934 ct., and prospecting groups 825 ct. Production in 1953 was 58 per cent gem, 42 per cent industrial.

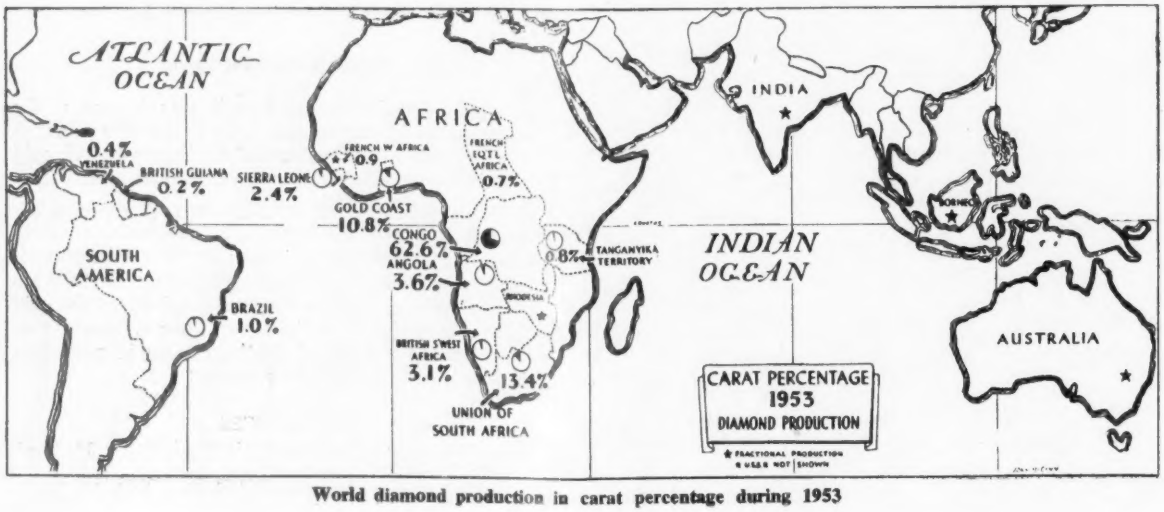
Tanganyika. Diamond production in Tanganyika in 1953 amounted to 170,679 ct., valued at £2,100,000. Most of the production is from the Mwadui mine of Williamson Diamonds Ltd., in the Shinyanga district.

OTHER COUNTRIES

British Guiana. Diamond production in British Guiana in 1953 amounted to 35,306 ct., of which about 60 per cent is said to be of industrial grade.

Venezuela. The diamondiferous areas in Venezuela are in the State of Bolivar, in the region of the upper and lower Caroni, the Paragua River, and at Icabaru. The richest deposits are around Peraitepu in the upper Caroni on the Gran Sabana. Production has gradually increased and total production in 1953 was 84,790 ct. Of the total 1953 production, 55,239 ct. was from the First Mining District, and 29,551 ct. from the Third Mining District.

Official figures give for 1953 the breakdown for 77,416 ct. graded into gem and industrial qualities, as 20,976 ct. gem, 39,920 ct. industrial and 16,519 ct. bort.



World diamond production in carat percentage during 1953

MACHINERY AND EQUIPMENT

Accessories for Swing Shovel

New front end equipments have been developed for the Ahlmann Swing Shovel, which was described in our issue of October 15. These attachments include a crane unit, a fork lift and a bulldozer blade. The equipments are completely interchangeable and the removal of a bucket and the replacing of it with any other attachment necessitates the removal of only three pins and can be effected in a few moments.

The Ahlmann swing shovel fitted with bulldozer blade

The crane hook will take loads of up to 1¼ tons and lift up to a height of 17 ft. when fitted, and the fork lift can raise 1¼ ton loads to approximately 15 ft. The bulldozer blade is 7 ft. wide and 1 ft. 9 in. deep.

A Light Hand Hammer Drill

A drill recently introduced by The Climax Rock Drill and Engineering Works Ltd. is the R.V. 200 hand hammer drill, which is a machine of low weight and economic air consumption. Indeed, air consumption is so low that two of these units can be satisfactorily operated from a normal 100 cu. ft. compressor. With a stroke of 1 1/16 in., bore of 2 in., and dry net weight of 23¾ lb., the R.V. 200 is very versatile.

The ordinary running blow-out enables the drill to be used for putting in holes up to 6 ft. deep in normal ground. The constant blow-out enables holes of up to 10 ft. to be satisfactorily drilled with bits of up to 1½ in. diameter.

The unit is easily converted for wet drilling by removing a brass cap and screwing in a water inlet bend. The drill is automatically rotated and is ideally suited for pot hole work in quarries. It supersedes the old plug drill, the steel of which was turned by hand. Shank size is 3¼ in. by ⅞ in., size of drill steel ⅞ in. round a hexagonal, and overall length without retainer 18⅝ in.

Geared Motors and Speed Reducers

Two new types of foot mounting and flange mounting fractional geared motors and speed reducers have been added to the standard range of larger industrial units made by Electropower Gears Ltd. Known as types ESR50 and ESRV50 these new units have a maximum torque at 12 r.p.m. of 24.6 ft./lb. In certain cases slower speeds are obtainable and the units are also available as a two-speed geared motor. The maximum standard ratio is 116.8-1 ; the minimum is 2.56-1.

Gear wheels, pinions and shaft are manufactured from high tensile steel, and the output shaft is fitted with ball bearings, while the first gear, second pinions and intermediate gear and final pinion revolve on fixed steel lay-shafts, the pinion being fitted with phospher bronze bushes. Splash lubrication is provided. These units can be mounted in practically any position although the exact position should be stated on the order.

The gearbox is self-contained, the motor being bolted on by four bolts after assembly. Motors of the three-phase, single phase D.C. variable speed commutator, protected or totally-enclosed, types complying with the usual B.S.S. can be fitted. Units can be supplied suitable for Canadian and American specifications.

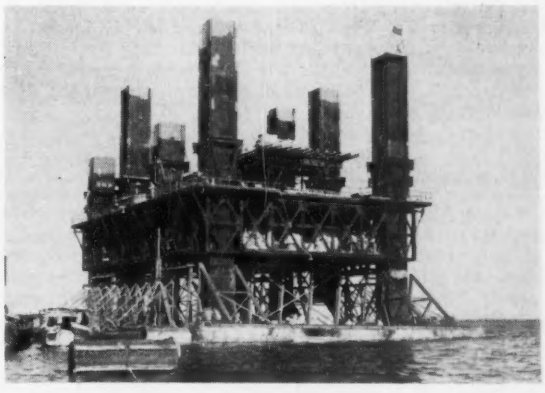
A high speed shaft can be brought out at the back end of the motor, if required. Oil seals are fitted to the final shaft and motor flange shaft. The units can be supplied as self-contained speed reducers with input flange and shaft suitable for driving by flexible coupling or belt drive. Silent in operation, the ESR50 and ESRV50 are suitable for fitting to all types of machinery.

The gearbox has small overall dimensions and maintenance is practically negligible. Each unit is subject to full speed test before despatch, and is supplied without oil. Electropower Gears units are widely used throughout the world, and have definite applications in the mining industry.

Underwater Oil Search in Persian Gulf

Last month a 1,200-ton moveable island of steel, with many features unique in the relatively new science of drilling for oil at sea, was set up in the Persian Gulf, five miles from shore. Built for Shell at a cost of around £500,000 it has been completed in just over nine months.

The steelwork was fabricated in the Netherlands and, after the completion of a mock assembly there, was shipped out to Doha in Qatar where the erection work was done by George Wimpey and Co. Ltd. of London. The major problem in underwater drilling is to provide a stable platform to carry the weight of the bulky plant and machinery required and at the same time withstand the pressures and stresses of the strongest winds and waves in the area. Taking advantage of the relatively hard sea-bottom in the Persian Gulf, Shell has developed this moveable drilling " island " for its Qatar venture.



The drilling platform in the final stages of construction

The platform was erected in the harbour of Doha on top of two 1,000-ton pontoon barges, and was towed out to the selected drilling location. When on site, eight heavy steel spuds or legs incorporated in the structure were lowered to the sea bed. After this, a system of powerful hydraulic jacks came into operation and lifted the platform itself up on the spuds, thus raising it clear of the supporting steelwork on the pontoons and allowing these to be withdrawn. The main deck platform is 140 ft. long by 90 ft. wide and is about 40 ft. above the level of the water. The drilling rig which is to be used on the first well is an Ideal 50, capable or reaching a depth of 7,000-8,000 ft.

METALS, MINERALS AND ALLOYS

COPPER.—Although prompt copper inevitably continues for the time being to be tight both here and in the States, market sentiment across the Atlantic, seems to sense an easing in the position within two to three months. This feeling is apparently based on the current high level of copper output in the world's major producing countries coupled with the fact that in the States some new developing mines will shortly be coming into production.

Certainly the present firmness of the copper price must remain an incentive to producers but the query remains : how long for? On the one hand , it is questionable just how big an increase in copper production the market will absorb at 30 c., while on the other, labour disputes—actual or potential—make the outlook uncertain both in Chile and on the Copperbelt. In Chile it will be difficult to see the future at all clearly until the new labour contracts have been successfully negotiated at Chuquicamata and Potrerillos and until the full text of the new mining laws are known and also the extent to which the copper companies are to benefit from devaluation of the peso. Some of the implications of these latter problems are considered elsewhere under Notes and Comments.

On the Copperbelt, the dispute between the Chamber of Mines and the African Mineworkers' Union has gone to arbitration and meanwhile at the beginning of this week the union began to take a strike ballot in the support of its claims for increased pay. The situation as regards the European mineworkers at Mufulira remains delicate. A fortnight ago the miners resolved to ban overtime in protest against the Selection Trust groups' invitation to the union to negotiate a fresh contract to allow for African advancement in the spirit of the Forster report backed by six months notice to terminate the existing contract. Miners, who have been asked to undertake Sunday work, have refused to do so. The management has responded with threats of dismissal which say the union branch would result in strike action.

Speaking at the annual meetings of the Selection Trusts copper companies at Lusaka last week, Mr. Prain had other matters to discuss besides the crucial problem of African advancement upon which his remarks did no more than restate his companies position, with which readers are already familiar. On the subject of Copperbelt mining costs he challenges the popular idea that Rhodesia is among the world's lowest cost producers, pointing out that calculations made by his group suggested that about 50 per cent of the world's present copper production is being produced more cheaply than at the Roan and Mufulira mines.

A major factor in this situation is of course the Copperbelt's uneconomic fuel bill, and this problem is discussed elsewhere under "Company News and Views."

LEAD AND ZINC.—In the States, consumer demand for lead, although generally disappointing, appeared slightly stronger towards the middle of this week and given continued Government buying the trade expects the 15 c. price level to be maintained. The battery industry shows welcome signs of improvement with estimates from industry sources that it will require 297,000 s.tons of lead next year compared with an estimated consumption of 266,750 s.tons in the current year.

American zinc demand has remained fairly good with die casters showing particular interest in special high grades. The Government's support programme continues to show results. At the end of October, smelter stocks were down to 152,137 s.tons, a decrease of over 40,000 tons in two months. American market circles are reported to be concerned at rumours of production increases both in the States and elsewhere. Some U.S. properties which had previously closed on account of low prices are now reported to be resuming operations.

An authorization for the import of 1,100,000 D-marks' worth of unrefined foundry zinc and/or refined zinc from the U.K. was published in the West German Official Gazette of November 23.

TIN.—Rules for the operation of Malayin tin mines under the impending Tin Agreement have now been laid before the Legislative Council and have been favourably received by the industry—for two good reasons. First, they endeavour so far as possible to protect the interests of the genuine miner, whose actual production figures in recent years may have been subnormal, or whose mind has only recently come into production. Secondly, an absolute prohibition is imposed on dealing in quotas, except as between mines which are now members of the same group or which may combine together in the future. This latter provision should go far to eliminate one major abuse which existed under the pre-war restriction scheme.

Among other notable provisions, the rules lay down that in the event of curtailment in output becoming necessary, quotas should be allocated between European and Asian mines in the proportion of 61.2 per cent to 36.8 per cent leaving dulang washers with 2 per cent. Each producing unit (dredge or minehole) is to be assessed separately. A dredge which has previously worked elsewhere in Malaya, and has restarted on a new site since the beginning of this year, will be assessed on its performance on the old site together with current operations on the new site for one year, during which time it may not transfer its quota. Mines which can give clear evidence that it was already their intention prior to January 1, 1954, to start work but had not done so by then will be assessed on their true productive capacity. Mines which have begun work since the beginning of the year will be assessed on output during the period worked.

Mines which fail to meet their quota by more than 10 per cent in any quota period will have their next quota cut by the whole amount of the deficiency unless good cause can be shown for the shortfall.

Latest Tin Study Group figures for the principle producing countries are summarized below and make interesting reading. In particular, certain recent trends which are obscured by our cumulative totals should be noted. Thus, in the case of Bolivian exports the monthly figures for June, July, August and September have been respectively 3,100, 2,912, 2,810 and 2,012 tons. The September figures in particular provide further confirmation of the widespread rumours regarding the falling off in Bolivian production referred to here last week. In the Congo, on the other hand, production appears again to be on the increase and in the four months July to October production was almost as great as in the preceding six months.

Country	*Period*	*1954*	*1953*
Belgian Congo	Jan-Oct	9,615	12,659
Bolivia*	Jan-Sept	20,960	26,859
Indonesia	Jan-Oct	29,753	27,837
Malaya	Jan-Oct	50,142	46,288
Nigeria	Jan-Sept	5,924	6,075
Thailand	Jan-Aug	6,282	6,575

* Exports

NICKEL.—The recurring shortage of nickel must, to say the least, be exasperating to users who might well have hoped that their troubles would have been over when controls were lifted a little more than a year ago. That these expectations have been falsified is largely due, as Dr. John F. Thompson made clear on his recent visit to London, to the very heavy demands being made by the U.S. stockpile programmes, coupled with the general expansion of industrial production which has been proceeding on both sides of the Atlantic during this year.

Stockpile pressure is largely conditioned by the large amount of nickel required in the special alloys which are being developed for gas turbine and the jet engines. Aircraft engines of these types require two to three times as much nickel per engine as would be the case in the conventional piston engine and some of the complex alloys now produced by International Nickel contain as much as 70 per cent nickel.

The Board of Trade and the Ministry of Supply were stated in the House last week to be reviewing the supply position. But it is difficult to believe that this will result in any reimposition of Government control and unofficial rationing by suppliers will no doubt continue. Some indication of the difficulty of the present position may be gained from the extremely high prices which have recently been paid for nickel on the Continent where some sales are believed to have taken place

at nearly £1,000 a ton, while the price of nickel scrap in this country is in the region of £600 per ton.

In these circumstances it may not be altogether surprising that International Nickel raised its sales price this week by £36 bringing the price to £519 per ton. The previous increase in nickel price occurred in January last year when it rose from £454 to £483. These increases have occurred despite the company's policy of gearing prices to production cost rather than what the market will bear. They are, no doubt, in part, a reflection of the high costs of mineral exploration and metallurgical research made necessary by industry's increasing demands.

COBALT.—A particularly satisfactory feature of the chairman's statement in the annual report of the Rhokana Corporation, published this week, was the revelation that the production of cobalt metal in the past financial year amounted to 693 tons compared with 269 in the previous period. This increase was mainly a reflection of increasing experience in the use of the new plant and the overcoming of initial operating difficulties. Indications are that as metallurgical efficiency is increased a higher production rate may be expected.

Iron and Steel

The heavy over-subscription of the £15,000,000 Dorman Long issue is a further indication of market confidence in the outlook for iron and steel. By the end of December the ingot output for the year is expected to reach a total of about a million tons in excess of the 17,610,000 tons produced in 1953, and Mr. Selwyn Lloyd the now Minister of Supply told the Commons this week that the figure is expected to reach 19,250,000 tons "or possibly more" in 1955.

Even that prodigious tonnage may not be enough. The Minister was at pains to point out that the responsibility of ensuring adequate supplies of iron and steel products rests with the Iron and Steel Board, and he indicated the probability that marginal tonnages of certain types of finished steel would have to be imported.

That stage in fact has already been reached in regard to steel sheets, notwithstanding an increase of 11 per cent in home production. The import of Belgian steel sections is also under consideration and large tonnages of Austrian and Russian pig iron, and of American scrap have already been purchased.

Whilst the output of steel has been raised to its highest pitch, pig iron production has recently fallen well below the average of a million tons a month in the first half of the year. A number of blast furnaces had been driven to the point when repairs were absolutely necessary, and although the more serious consequences have been averted by raiding service stocks, the restoration of more blast furnaces to full production has become a matter of urgency.

Supplies of scrap from the Continent have also shrank very considerably, and at higher cost cargoes of American scrap are now coming to hand quite regularly.

The revival in the re-rolling industry is imposing a heavy strain on the makers of prime billets and the mills rolling ferro concrete bars and wire rods are so heavily booked that they are now indicating next July as the earliest delivery date for new orders.

The London Metal Market

(From Our Metal Exchange Correspondent)

The tin prices have fluctuated moderately during the week, with no very definite trend outstanding except that in a thin market such as exists at the present time it would seem that values might be expected to be maintained around present levels pending any new developments. It seems possible from announcements made that the International Tin Agreement will be ratified by a number of countries, and proposals are being well received for the method of establishing quotas for Malayan producers when the Agreement comes into force. On Thursday morning the Eastern price was equivalent to £724 per ton c.i.f. Europe.

With a slight slowing down in demand for copper on the Continent prices have tended to ease off, and on the London market the backwardation has contracted quite appreciably. Nevertheless the basic position of copper has not changed materially and supplies seem likely to remain rather scarce. In America a good demand is reported, and in spite of the relief given by diversion of stockpile material, not always of the shapes required by fabricators, the supply position still seems to be tight.

Lead for prompt delivery still seems to be very scarce, but the settlement of the Australian dock strike has prompted an easier feeling in regard to supplies for the future. Metal for the coming half-monthly settlement has been more freely offered, some of it said to be on American account, and the backwardation has narrowed considerably. The price in the last few days on the London market has been depressed by sales which appear to be on account of foreign producers.

Zinc prices have moved within narrow limits during the week in spite of the good rate of consumption maintained in the U.K. and on the Continent this year. Regular quantities of metal are being taken off the market in America by purchases for the stockpile, but even so supplies seem ample to meet all needs.

Closing prices and turnovers are given in the following table:

	November 18		November 25	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Tin				
Cash	£730	£732	£722½	£723½
Three months	£725½	£727	£718	£718½
Settlement	£732		£723½	
Week's turnover	710 tons		635 tons	
Lead				
Current month	£109	£109¼	£103¼	£103¾
Three months	£104¼	£104¾	£101¾	£102¼
Week's turnover	3,400 tons		3,350 tons	
Zinc				
Current month	£81⅛	£81¼	£80⅝	£80¾
Three months	£81⅛	£81¼	£80⅝	£80¾
Week's turnover	2,850 tons		3,450 tons	
Copper				
Cash	£279	£280	£271½	£272½
Three months	£268	£268½	£263½	£264
Settlement	£280		£272½	
Week's turnover	5,325 tons		4,550 tons	

OTHER LONDON PRICES — NOVEMBER 25

ANTIMONY

English (99%) delivered, 10 cwt. and over .. .. £210 per ton
Crude (70%) .. .. .. £200 per ton
Ore (60% basis) .. .. .. 22s./24s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) .. .. £519 per ton

OTHER METALS

Aluminium, 99.5%, £156 per ton
Bismuth (min. 2 cwt. lots) 16s. lb.
Cadmium (Empire), nominal
Chromium, 6s. 5d./7s. lb.
Cobalt, 21s. lb.
Gold, 251s. 5d. f.oz.
Iridium, £39 oz. nom.
Magnesium, 2s. 4d. lb.
Manganese Metal (96%-98%) £225/£262
Osmiridium, £40 oz. nom.
Osmium, £46 oz. nom.
Palladium, £6 15s. oz.
Platinum, £30/£31
Rhodium, £43 10s. oz.
Ruthenium, £22 oz.
Quicksilver, £110 ex-warehouse
Selenium, 35s. 9d. nom. per lb.
Silver 74¼d. f.oz. spot and 74d. f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 30% 5s. 0d. lb. c.i.f.
20% 3s. 3d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (semi-friable) 48% £12 8s. 0d. per ton c.i.f.
" Refractory 45% .. £12 14s. 0d. per ton c.i.f.
" Smalls 44% .. £8 5s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26-£27 d/d
Magnesite, Raw .. .. .. £10 - £11 d/d
Molybdenite (85% basis) .. .. 102s. 4d. - 103s. per unit c.i.f.
Wolfram and Scheelite (65%) .. 192s. 0d./195s. 0d. - U.K.* Gov't Stock d/d 194s. 0d. plus charges
" " " Tungsten Metal Powder (98% Min. W.) .. .. 17s. 0d. nom. per lb. (home)
Ferro-tungsten .. .. .. 14s. 0d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £37 6s. 3d. d/d per ton
Ferro-manganese, home .. .. £54 15s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46%-48%) .. .. .. 68d./70d. per unit nom.
Brass Wire .. .. 2s. 8⅞d. per lb. basis
Brass Tubes, solid drawn .. .. 2s. 7⅞d. per lb. basis

* ex-Government stock for prompt delivery from November 26

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The past week has been one of sustained activity although price movements have been modest. The Conservative victory in the West Derby by-election ensured success for the Dorman Long flotation as shown by the premium. The large quantity of capital, however, being found has naturally put a check on markets. The United Kingdom financial position remains encouraging with buoyant revenue returns and a further increase in small savings.

Mining men may be interested in the plans for expansion by Cementation. The company proposes to make an issue of 5½ per cent 2nd preference stock and to capitalize reserves by an issue of more ordinary shares. The business has grown rapidly since the end of the war.

Kaffirs began the period in better heart, due to hopes that Mr. Havenga would be elected the next Prime Minister. Later, doubts concerning the political outlook brought about a check and prices were marked down following scattered selling. In many cases, however, overall gains were recorded on the week. While much obviously depends upon the result of the Nationalist party meeting on November 30, indications are that the market may improve once the existing uncertainty is out of the way.

Among finance houses, Consolidated Goldfields and Consolidated Mines Selection were good features. Johannesburg Consolidated went ahead following the favourable remarks by the chairman. West Rand Investment Trust were also bought due to optimism concerning the future of the trust's properties on the Far West Rand. The shares at one time touched a six-year high.

Individual Rand mines showed rather erratic movements. Business tended to die away towards the end of the week. Chief features were a sharp drop in Luipaards Vlei after the news concerning faulting in the uranium bearing Bird reef and a fall in gold production occasioned by preparing for uranium output. Randfontein were good. Market rumours suggest that better uranium figures may be forthcoming this month. The higher dividend of 45 per cent against 40 per cent announced by Rand Selection failed to stimulate much interest in the shares.

In the Orange Free State section, overall changes were less marked. After an initial burst of activity, prices failed to hold the ground gained although there was some speculative inquiry for the lower priced issues.

West Africans tended to drift. Activity was restricted and prices generally finished the turn lower. An encouraging feature has been the little real selling and the market still substantially holds the gains of a few weeks' ago. This appears to be a healthy situation and interest might well again be stimulated if favourable news were forthcoming.

Coppers, despite good figures from Rhokana were overshadowed by the approaching labour problem and share prices were mainly easier. Investment buying of Chartered occurred as the company is not actively concerned in working costs and draws its revenue from royalties. Selection Trust rose after the recent check and Tanks were a strong feature against the general trend.

Tin shares were rather featureless in both groups although interest was apparent in British Tin Investment and Beralts.

Among Barriers, Consolidated Zinc were a good feature due to strong buying and there was some speculative demand for Lake George Mines although the property is still on a care and maintenance basis.

Canadians displayed good features. Wall Street was strong but the better outlook for base metals caused additional encouragement to Hudson Bay Mining and Noranda. The sharp increase in nickel prices brought about a further rise in International Nickel.

FINANCE	Price Nov. 24	+ or — on week
African & European	3/-	—1/-
Anglo American Corpn.	8¼	—⅛
Anglo-French	25/-	—1/3
Anglo Transvaal Consol.	24/4½	+7½d
Central Mining (£1 shrs.)	45/3	.....
Consolidated Goldfields	60/-XD	+3/-
Consol. Mines Selection	50/-	+1/3
East Rand Consols	3/3	.....
General Mining	5⅛	+⅛
H E. Prop. 5/- Shares	10/3XD	—1¼d
Henderson's Transvaal	8/3	—3d
Johnnies	50/3	+2/6
Rand Mines	3-11/16	+⅛
Rand Selection	42/6	.....
Union Corp. (2/6 units)	35/-	+9d
Vereeniging Estates	4-1/16	.....
Writs	40/1½	+2/6
West Wits	43/9	.....
RAND GOLD		
Blyvoors	33/-	—6d
Brakpan	9/-	.....
City Deep	16/3	+3d
Consol. Main Reef	22/6	+1/6
Crown	46/10½	+7½d
Daggas	67/6	+7½d
Doornfontein	33/-	—6d
Durban Deep	33/9	+1/3
E. Daggas	12/4½	+1½d
E. Geduld .. (4/- units)	28/9	.....
E. Rand Props	45/-	.....
Geduld	3-1/16	+⅛
Govt. Areas	12/3	—3d
Grootvlei	19/3	.....
Libanon	9/3	+1½d
Luipaards Vlei	20/9	—1/6
Marievale	21/-	+3d
Modderfontein East	17/6	.....
New Kleinfontein	11/9	+3d
New Pioneer	12/9	.....
Randfontein	72/9	+2/3
Robinson Deep	22/6	+7½d
Rose Deep	14/6	—3d
Simmer & Jack	5/3	.....
S.A. Lands	23/9	.....
Springs	3/6	.....
Stilfontein	28/6	+1/3
Sub Nigel	40/-	+1/3
Van Dyk	4/-	—3d
Venterspost	13/3	—3d
Vlakfontein	18/3	—3d
Vogelstruisbult	36/3	+6d
West Driefontein	6-1/16	.....
W. Rand Consolidated	53/1½	.....
Western Reefs	48/9	—1/10½
O.F.S.		
Freddies	7/3	.....
Freddies Consolidated	19/3	+3d
F. S. Geduld	5-1/16	.....
Harmony	40/3	+3d
Loraine	14/7½	—6d
Lydenburg Estates	24/4½	+7½d
Merriespruit	12/6	—10½d
Middle Wits	18/3	—3d
Ofsits	78/1½	—7½d
President Brand	75/-	—3d
President Steyn	43/9	.....
St. Helena	29/-	+4½d
Virginia Ord.	14/-XR	—9d
Welkom	28/-	—7½d
Western Holdings	5½	.....
WEST AFRICAN GOLD		
Amalgamated Banket	2/9	—1½d
Ariston	8/-	—4½d
Ashanti	27/6	—3d
Bibiani	5/10½	—1½d
Bremang	1/7½	—1½d
G.C. Main Reef	4/10½	—6d
Konongo	3/-	—4½d
Lyndhurst Deep	1/4½	.....
Marlu	1/7½	.....
Taquah & Abosso	4/1½	—4½d
W. Selection & Dev	11/7½	—6d
AUSTRALIAN GOLD		
Gold Mines of Kalgoorlie	14/6	.....
Great Boulder Prop.	8/6	.....
Lake View and Star	15/4½XD	—4½d
Mount Morgan	18/6	.....
North Kalgurli	8/9	.....
Sons of Gwalia	5/-	.....
Western Mining	11/4½	+1½d
MISCELLANEOUS GOLD		
Cam and Motor	9/6	.....
Champion Reef	4/6	.....
Falcon Mines	7/10½	—1½d
Globe & Phoenix	23/-	.....
G.F. Rhodesian	7/6	.....
London & Rhodesian	5/6	.....
Motapa	1/9	.....
Mysore	5/-	.....
Nundydroog	6/4½	—1½d
Ooregum	4/6	—3d
St. John d'el Rey	13/9	.....
Zaaps	43/3	+1/9
DIAMONDS & PLATINUM		
Anglo American Inv.	8½	+⅜
Casts	28/-	—1/3
Cons. Diam. of S.W.A.	6½	.....
De Beers Defd. Bearer	5-9/16	.....
De Beers Pfd. Bearer	17⅜	+⅜
Pots Platinum	9/6	—4½d
Watervaal	15/7½	.....
COPPER		
Chartered	93/1½	+4/1½
Esperanza	5/6	.....
Indian Copper	4/9	—9d
Messina	5-7/16	+⅜
Nchanga	11⅛	—⅛
Rhod. Anglo-American	77/6	—9d
Rhod. Katanga	12/6	+6d
Rhodesian Selection	22/3	—4½d
Rhokana	27½	—⅛
Rio Tinto	38¼	—¼
Roan Antelope	19/9	—6d
Selection Trust	62/6	+1/-
Tanks	5½	+⅛
Tharsis Sulphur Br.	8⅛	+⅛
TIN (Eastern)		
Ayer Hitam	29/9	.....
Gopeng	8/1½	.....
Hongkong	9/-	.....
Ipoh	20/6XD	.....
Kamunting	8/3	.....
Kepong Dredging	4/3	—3d
Kinta Tin Mines	10/6	.....
Malayan Dredging	28/-	—1½d
Pahang	10/7½	+1½d
Pengkalen	9/6	+3d
Petaling	7/10½	+3d
Rambutan	17/6	+3d
Siamese Tin	7/-	+3d
Southern Kinta	19/1½	.....
S. Malayan	25/3	+3d
S. Tronoh	11/3	—3d
Sungei Kinta	12/6	.....
Tekka Taiping	6/7½	+1/1½
Tronoh	26/6	+3d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	15/4½	—7½d
Beralt Tin	24/6	+1/3
Bisichi	7/1½	—1½d
British Tin Inv.	18/1½	+9d
Ex-Lands Nigeria	3/1½	—1½d
Geevor Tin	13/3	.....
Gold & Base Metal	3/-	—1½d
Jantar Nigeria	10/9	+9d
Jos Tin Area	14/3	.....
TIN (Nigerian and Miscellaneous) contd.		
Kaduna Prospectors	2/7½	—1½d
Kaduna Syndicate	2/7½	—1½d
London Tin	6/6	.....
United Tin	3/3	+1½d
SILVER, LEAD, ZINC		
Broken Hill South	53/-	+3d
Consol. Zinc	45/7½XD	+1/1½
Lake George	7/7½	+7½d
Mount Isa	44/6XD	—9d
New Broken Hill	35/6XD	+9d
North Broken Hill	66/-	—3d
Rhodesian Broken Hill	12/-	+1½d
San Francisco Mines	23/6	+1/3
Uruwira	4/6	+3d
BASE METALS & COAL		
Amal. Collieries of S.A.	49/3	+6d
Associated Manganese	43/6	+9d
Cape Asbestos	12/3	.....
C.P. Manganese	44/-	+1/6
Consol. Murchison	55/-	—1/3
Mashaba	2d	.....
Natal Navigation	2-1/16	+⅛
Rhod. Monteleo	1/3	.....
Turner & Newall	92/6	+6d
Wankie	17/-	.....
Witbank Colliery	4½	.....
CANADIAN MINES		
Dome	$31	.....
Hollinger	$30½	+½
Hudson Bay Mining	$99½	+2½
International Nickel	$104	+3
Mining Corpn. of Canada	£6⅛	+⅛
Noranda	$156	+6
Quemont	£7⅞	—⅛
Yukon	3/7½	—1½d
OIL		
Anglo-Iranian	18-1/16XD	+1/16
Apex	30/6	+3d
Attock	47/6	.....
Burmah	6	+½
Canadian Eagle	43/-	+6d
Mexican Eagle	23/-	+1½d
Shell (bearer)	6-3/16	+11/16
Trinidad Leasehold	31/6	+3d
T.P.D.	29/-	+1/3
Ultramar	28/10½	+7½d

COMPANY NEWS AND VIEWS

Rhodesian Copper Prospects

The continued prosperity of the Northern Rhodesian Copperbelt has resulted primarily from a consistently firm copper price which to a large extent, has been the outcome of adverse labour conditions in the United States and Chile.

With regard to the future, however, it would not be unreasonable to suppose that there must be a limit to the exent to which copper consumers will follow the metal price to higher leve.s in their efforts to secure continuity of supplies. The ability of the major copper producers—particularly Northern Rhodesia and Chile which together are responsible for nearly 40 per cent of total world output—to avoid political upheavals will go a long way towards determining whether copper will continue to justify its present statistical position.

Indeed, Mr. R. L. Prain, chairman of both Roan Antelope and Mufulira copper mines whose reports and accounts have now been published, sees the issue of African advancement on the mines as the most serious problem to be solved. Furthermore, until a solution is found he does not think the industry can look forward to a period of full production, industrial peace, and economic progress.

In addition, the more basic question of costs presents an ever increasing problem. During 1954-55 he forecasts that the extra cost of power and railage alone will represent another £5 per ton apart from another £10 per ton for replacements which ought to be a permanent charge. The popular idea that Rhodesia is among the world's lowest cost producers is not now correct and he estimates that about 50 per cent of the world's present copper production is produced more cheaply than at Roan and Mufulira. The present fuel position has done much to aggravate this situation. Could the Copperbelt obtain sufficient coal from Wankie the expense of finding wood for the furnaces would be eliminated. Under these conditions power which now costs 1.238d. a kW. would fall to 0.899d. a kW.; in consequence Roan would save £286,000 and Mufulira £300,000 a year—savings to the whole Copperbelt would amount to £1,200,000 yearly. As is well known, this adverse situation is due entirely to the inability of the Rhodesian railways to provide sufficient transport facilities from Wankie colliery which is now in a position to deliver 313,000 tons of coal a month, equivalent to 107.5 per cent of the Federal requirements. At present, however, the railway is unable to carry more than 250,000 tons of coal away from Wankie per month. This difficulty is likely to persist for some time. For even with the advent of new locomotives and rolling stock there remain staffing problems with their attendant housing difficulties which could not immediately be resolved.

Production for the first three months of the current financial years of Roan and Mufulira are shown to have been well maintained despite the fall in sales in comparison with the preceding quarters which was due to the pipe lines to consumers having only recently become fully re-established. But in the case of Mufulira, it should not be assumed that the September quarter production rate indicates similar rates during the remainder of the current year. This will not be possible due to certain repair work which will involve a temporary curtailment of production.

	1953	1954	1954	1954
Mufulira	*Dec. Qtr.*	*Mar. Qtr.*	*June Qtr.*	*Sept. Qtr.*
Sales (l.tons) ..	18,133	23,664	32,398	18,525
	(£000)	(£000)	(£000)	(£000)
Revenue	4,079	5,307	7,496	4,310
Costs	2,875	2,061	3,229	2,749
Difference in value of copper stocks ..	Cr. 732	Dr. 735	Dr. 387	Cr. 640
Surplus	1,936	2,511	3,880	2,201
London Expenses ..	Nil	Nil	Nil	Nil
Replacements* ..	216	211	209	277
Profit before taxation†	1,720	2,300	3,671	1,924
Roan Antelope				
Sales (l.tons) ..	14,749	24,744	32,242	16,598
	(£000)	(£000)	(£000)	(£000)
Revenue	3,337	5,536	7,455	3,796
Costs	2,866	2,707	2,940	2,707
Difference in value of copper stocks ..	Cr. 1,010	Dr. 328	Dr. 1,166	Cr. 697
Surplus	1,481	2,501	3,349	1,786
London Expenses ..	Nil	Nil	Nil	Nil
Replacements* ..	198	190	190	208
Profit before taxation†	1,283	2,311	3,159	1,578

* Subject to revision when year's accounts considered. † Estimated.

Rhokana's Investment Portfolio

In his statement to shareholders of the Rhokana Corporation Sir Ernest Oppenheimer pointed out that the company's earnings have shown a continuous rising trend in recent years. Net profits rose from £6,700,000 in 1950-51 to £7,800,000 in the following year while the past financial year shows a further advance rise to over £9,500,000.

The fact that very nearly the whole of these increases resulted from larger dividends received on shareholdings in Nchanga and Mufulira clearly illustrates the corporation's importance as an investment company quite apart from its established position as a copper mine. Rhokana, which is a subsidiary of Rhodesian Anglo American, at present holds 34 per cent of the equity of Mufulira Copper and 27 per cent of Nchanga Consolidated. In addition it has a large stake in Bancroft in which it holds 48 per cent of the equity and this excludes an advance of £3,000,000 to this company in the form of notes. Although Mufulira and Nchanga are of predominant importance, Rhokana's interest in Bancroft should not be under-rated particularly in view of the spectacular advance in that company's shares which, since their issue, must have resulted in an increase of some £9,000,000 to the market value of Rhokana's portfolio. A participation has also been taken in the developing of Chibuluma property which is scheduled to come into production towards the end of 1955.

Indeed, Rhokana's total investments in copper mines in Northern Rhodesia must represent over 70 per cent of its total present market capitalization. If this is so the Rhokana mine itself has a market value of something like £22,000,000 which is considerably below other comparable Copperbelt mines. Undoubtedly, the main reason for this is the high price of the shares which is the outcome of low capitalization. Should the future bring a proposal to align the issued capital more accurately with that employed in the business, the present deficiency in the company's share valuation could be made up very quickly.

Sir Ernest also referred to the failure by Rhodesia Railways to keep pace with Wankie Colliery's potential output. The problem, he says, is not one to which there is any quick solution although vigorous action has been promised. This not unnaturally brings to mind future problems which will surely arise from the projected expansion of copper production in Northern Rhodesia. If the railways find it difficult at present to clear copper stocks how much more difficult will their task be when the new Copperbelt mines start producing.

Preliminary figures for Rhodesian Selection Trust, Mufulira, and Roan Antelope were given on page 432 of *Mining Journal*, issue October 15. Those for Rhodesian Anglo American and Rhokana were given on page 497 of the October 29 issue.

Consolidated Gold Fields Earns More—Pays More

The consolidated profit and loss account of New Consolidated Goldfields, Consolidated Goldfield's subsidiary in which all the group's assets are vested, showed that of the increased profits earned during the year ended June 30, 1954, dividends and share dealing profits totalled £1,585,779 against £1,682,714 last year. It is reasonable to suppose therefore that the balance of £758,899 which compares with £536,608 previously represents a substantial increase in earnings by the group subsidiary companies.

Year to June 30	*Total Profits**	*Taxation*	*Net Profit*	*Dividends*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1954	2,344,678	904,498	1,377,310	532,125	557,276	1,612,150
1953	2,219,322	917,145	1,237,718	467,531	513,736	1,368,971

* Profits from realisation of investments £332,338 (1953 — £357,422)

Dividends paid on Consolidated Goldfields' issued ordinary capital of £4,500,000 in shares of £1 each were increased to 17½ per cent from 15 per cent in respect of the preceding period.

Of particular note in the consolidated balance sheet of New Consolidated Goldfields is that Stock Exchange valuation of investments has been disclosed for the first time. At the date of the accounts, group quoted investments are shown at or under cost of £9,600,000 but had, at that date, a market value of £22,400,000, a figure substantially below the previous year's valuation. But in addition to this reserve position, which remains more than exceptionally strong, the accounts also show that net current assets of over £4,000,000 were held as against £3,000,000 previously. Of the current figure cash represented nearly £4,000,000.

An interesting point has emerged with regard to the

groups' investments in connection with the analysis of Rand and O.F.S. quarterly results which are published by the *Mining Journal*. Last year the chairman of the company, Mr. Robert Annan, stated that 87 per cent of the market value of the company's investments as at June 30, 1953, was in gold mines capable of producing gold at less than 150s. per oz. A study of our analysis table suggests strongly that this proportion of the company's funds must therefore be invested in the mines on the West Wits Line. The word "capable" is of course important in this respect for Libanon's costs are currently running in the region of 200s. an oz. But this new mine should have no great difficulty in reaching the standard of its neighbours as time progresses.

In view of the most promising growth prospects of the West Wits mines the investment value of the company is indeed attractive. Consolidated Goldfields £1 ordinary shares at present stand at about 57s. 6d. at which price they yield about 6 per cent. Meeting, London, December 9.

Johnnies U.K. Mining Activities

At the meeting of Johannesburg Consolidated Investment Company, which was held in Johannesburg earlier this week, Mr. Kenneth Richardson, who deputized for the chairman, reviewed the many activities in which the corporation is engaged. While many of the aspects he touched upon had received publicity in the past his reference to the corporation's United Kingdom mining activities was particularly interesting.

Improvements in the prices of lead and zinc have been reflected in the trading results in the Abbey Town mining company and Llanrwst Lead Mines. And while declines in the grade of ore have taken place at both mines recently, a development programme has been undertaken with the objective of reaching the higher grade ore previously indicated by bore hole results. At Matlock exploration continued but has not yet reached the stage where it is considered practicable to commence full-scale mining operations.

A review of Johnnies' financial year's results to June 30, 1954, was given in the *Mining Journal* page 376, issue October 1.

Modder East's Klipfontein Area

A reference was made during the recent meeting of Modderfontein East to the fact that the company had started drawing ore from the Klipfontein area. So far as could at present be determined, however, the prospective tonnage from this area was not very large. Dumps of development rock on the surface near the shafts were being re-examined with the hope that some of this could be treated profitably.

Aluminium's Nine Months' Earnings

Earnings per share of Aluminium Limited, on the basis of 9,027,308 shares outstanding at the end of the nine months' period which terminated on September 30, 1954, rose to $1.61 compared with $1.56 in the corresponding period of 1953. Consolidated net profits for this period were increased to $14,578,519 as against $14,090,376 previously. Dividends paid by the company in respect of the nine months of the current year ending December 31 absorbed $13,250,328 as compared with $12,873,103 in the preceding period. This increase reflects no change in the quarterly dividend rate which was maintained at U.S. 50 c. per share the same as for the preceding year—the additional sum absorbed being due to the larger number of shares outstanding.

The company states that the nine months figures reflect starting up expenses and normal diminishing balance of depreciation on operations at the new smelter and hydro-electric plant at Kitimat. Aggregate capital cost allowances of $37,134,788 comprised $18,594,037 of normal allowances on facilities in operation and $18,540,751 of other allowances. The latter provision had the effect of reducing profit carried to earned surplus by $10,535,057 last year. The impact of other allowances on profit amounted to $11,674,620. Consolidated sales for the period were $240,000,504 against $248,625,624 last year, while cost of sales dropped from $148,880,001 to $137,802,031. Income taxes required a provision of $19,156,080 compared with $19,953,425 previously.

Cementation's Capital Plan and Increased Earning

It is announced that the Cementation Company is proposing to raise about £750,000 for expansion purposes by the issue of 750,000, 5½ per cent cumulative preference shares of £1 at par. Simultaneously holders of the £250,000, 4½ per cent cumulative second preference stock will be offered conversion into 5½ per cent preference. In addition there will be a scrip issue of one new 1s. ordinary shares for two already held after which the equity capital will be consolidated into 5s. units. On the assumption that the second preference stock is fully converted the company's ultimate capital structure will be the 6 per cent preference stock, followed by the 5½ per cent cumulative preference and the ordinary shares.

During the year ended March 31, 1954, a rise took place in the profits earned by the company.

Year to Mar.31	*Total Profit*	*Taxation**	*Net Profit*	*Dividends*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1954	610,131	387,283	222,848	110,756	200,000	78,609
1953	537,958	350,308	187,650	110,058	NIL	64,643

* After transfer from taxation equalization reserve £15,000 (1953 — £44,500)

Dividends paid on the present issued ordinary capital of £975,000 in stock units of 1s. were maintained at the previous year's level of 17½ per cent.

Cementation 1s. ordinary units now stand at a level of about 3s. 3d. at which price they yield just over 5 per cent. On the basis of the present price the market valuation of these shares, ex-scrip issue, in their consolidated 5. form would be about 11s. 3d.

Mr. A. R. Neelands is chairman. Meeting, London, December 15.

Southern Malayan and Malayan Tin Earn Less

Total revenue earned by Southern Malayan Tin Dredging during the year ended June 30, 1954, dropped to £1,231,547 as against £1,739,021 previously. After mining costs of £505,888 (£518,592) and taxation of £377,448 (£663,664) net profit was £368,439 compared with £524,538. Dividends paid on the issued ordinary capital of £432,500 in shares of 5s. amounted to 80 per cent which absorbed £190,300. This compares with 120 per cent in the preceding period which absorbed £278,963. The balance unappropriated was decreased to £76,525 as against £174,523 previously.

In the case of Malayan Tin Dredging's year to June 30, 1954, a steeper fall in total revenue was experienced, income declining to £842,058 from £1,151,331 previously. After mining costs of £285,352 (£346,639) and taxation of £234,270 (£400,299), a balance of £168,444 as against £255,923 remained for appropriation. Dividends of 80 per cent, absorbing £132,000, were paid on the issued ordinary capital of £300,000 in 5s. shares. This compares with 120 per cent for the previous period which absorbed £193,500. The balance carried forward was reduced to £154,011 as against £220,885. Mr. E. V. Pearce is chairman of both companies whose meetings in London are arranged for December 15.

Malaysiam's Profits Fall

Following the decision last year to operate the Malayan tin-bearing properties of Malaysiam Tin on a tribute basis, only four months' operations were carried out by the company itself during the year ended March 31, 1954.

Year to Mar. 31	*Tin Proceeds**	*Mining Costs*	*Taxation*	*Net Profit*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1954	18,224	10,368	3,724	4,479	4,013	1,956
1953	46,703	29,479	7,026	11,195	12,000	1,490

* Including tribute ore proceeds £9,050 (1953 - £8,844)

The production table below applies therefore only to this limited period and no strict comparison can consequently be made with the previous year's production figures.

Year to Mar. 31	*Treated (cu. yd.)*	*Per Cu. Yard. Yield (lb.)*	*Cost (s. d.)*	*Output (tons)*	*Per ton ore cost*	*sale*
					£	£
1954*	54,600	.87	2 8	21	350	399
1953	253,800	.59	2 4	67	440	565

* Four months' operations only

Sir Joseph Ball is chairman. Meeting, London, December 13.

Sir Lindsay Parkinson's Overseas Activities

In his statement to shareholders of Lindsay Parkinson and Company accompanying the annual accounts for the year ended December 31, 1953, Mr. A. E. Parkinson, chairman, referrred to the widespread overseas activities of the group. Particularly notable in this respect was his reference to the £8,000,000 contract which the company has recently obtained in the Gold Coast, West Africa. The work entailed under this contract involves the construction of a new harbour at Tema which will

be undertaken in conjunction with Messrs. John Howard and Company and will take four years to complete.

Total revenue earned by the group during the past financial year rose to £433,518 as against £308,080 in the preceding period. After charges, expenses, etc., an amount of £111,966 (£70,343) remained which constituted the net profit for the year. Of this amount taxation absorbed £78,241 against £3,791 previously. Dividends of 10¼ per cent (same) were paid on the issued ordinary stock of £200,000. The balance carried forward was increased to £56,854 compared with £46,779 brought in previously. Meeting, London, December 10.

Harrisons and Crosfield Maintains Profit

Although Harrisons and Crosfield's accounts for the year ended June 30, 1954, revealed that profits were maintained, full details of the company's import—export and general trading activities must await Sir Eric Miller's statement to shareholders.

Year to June 30	*Total Revenue*	*Taxation*	*Net Profit*	*Dividends*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1954	1,596,187	623,495	588,773	187,165	353,125	600,496
1953	1,621,608	627,203	667,672	170,518	497,000	552,013

Dividends amounting to 20 per cent were paid on the company's issued deferred ordinary stock of £1,000,000 in £1 stock units. This makes an increase over the previous year's 35 per cent distribution which was paid on an issued ordinary stock of £500,000.

The Consolidated group balance sheet while showing a rise in total assets from £10,659,134 to £11,583,008 also reveals a strong financial position. Current assets exceeded current liabilities by over £5,000,000 while British Government securities, shown at £155,731 had a market valuation as at June 30 of £210,476. Meeting, London, December 13.

Company Shorts

Official Disclosure of South African Uranium Exports.—Exports of uranium and thorium from South Africa in respect of the first nine months of the current year have been reported as having a value of £9,132,790 compared with £2,324,362 in the corresponding period of 1953.

The foregoing figures, released this week in a preliminary trade statement published by the South African Commissioners of Customs and Excise, caused a good deal of surprise in view of the hitherto complete ban on the publication of any statistics relating to the value of uranium production.

Lake View and Star's Current Production.—Figures so far received in respect of the Lake View and Star's current year which ends on June 30, 1955, show that up to October 5, 198,500 tons of ore have been milled as against 201,700 in the previous comparable period to October 6, 1953. The number of ounces recovered showed a decrease to 44,232 from 45,594 previously. Although tailings retreated amounted to 233,600 which was almost double the previous figure of 119,100.

The above figures represent the correct version of current operations in respect of the present financial year by this company and are published as a correction to those given in the *Mining Journal*, issue November 19, page 587. In addition, it should be noted that costs per ton of ore treated as stated in the production table accompanying our article refer to Australian currency and not sterling. In a footnote to this table profits made from retreatment of tailings for the year ended June 30, 1954, should have been £A34,484 (1953 : £A31,830).

Mount Lyell Earns Record Profit.—A record net profit of £A398,845 (£A200,313) was earned by Mount Lyell Mining and Railway Company during the year ended September 30, 1954. This figure was arrived at after writing off prospecting and development charges of £A40,540 (£A32,361), depreciation £A143,430 (£A71,880) and taxation £A175,000 (£A76,250).

The distribution on the company's £A2,352,000 in £A1 stock units was accordingly raised to 8¼ per cent from 6¼ per cent in respect of the preceding period. Mr. W. E. Bassett is chairman.

Rand Selection Pays 45 Per Cent on Increased Capital.—A dividend of 45 per cent has been recommended on the issued ordinary capital of £1,818,993 in shares of 5s. of Rand Selection Corporation. Previously a dividend of 40 per cent was paid but this was before the capital had been increased by £100,000 to its present level.

After provision for taxation, the estimated net profit for the year to September 30, 1954, was £933,000 as compared with £746,388 in the preceding period. It is proposed to set aside £100,000 as a prospecting and exploration reserve. Mr. W. D. Wilson is chairman.

Trepca's Rise in Revenue.—Profits of £43,689 (£26,902) from the realization of investments and government securities made by Trepca Mines during the year ended September 30, 1954, were primarily responsible for the company's expansion in revenue. Dividends and interest also showed an advance to £33,759 against £27,119 in the year before.

Year to Sep. 30	*Total Revenue*	*Taxation*	*Expenses*	*Net Profit*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1954	80,293	21,000	7,267	52,026	25,000	220,154
1953	60,539	7,219	5,939	47,381	45,000	193,128

The Foreign Compensation Commission has not yet completed its consideration of the many claims made against the global compensation of £4,500,000 which is being paid in instalments by Yugoslavia. However, the fourth annual report of the commission for the year ended March 31, 1954, revealed that provisional awards at that time totalled £11,733,516 while claims remaining to be heard amounted to £18,176,726.

Trepca Mines was provisionally awarded £5,200,000 in 1952 but the amount which will eventually be received is not ascertainable. Meanwhile, former assets of the company in Yugoslavia were shown on the company's balance sheet at £1,243,004 (a figure based on 1941 mine accounts). Due to an interim payment from the Foreign Compensation Commission of £257,184 which was received in the early part of the last financial year, this figure marked a decrease from that of previous years when Yugoslavian assets stood at £1,500,188.

Under its agreement with Selection Trust, Trepca acquired an interest during the year in Vaal Reefs Exploration and Mining and in Bikita Minerals (Private) and is currently interested in the Trusts investigations in Canada.

Trepca 5s. ordinary shares now stand at around 3s. 8d. Mr. A. Chester Beatty is chairman. Meeting, London, December 10.

Barclays D.C.O. Earns More, Pays Same.—The net profit earned by Barclays Bank D.C.O. during the year ended September 30, 1954, rose to £939,953 as against £869,431 in the preceding period. Dividends were maintained at 8 per cent on the "A" stock and "B" shares—the same rate as for the previous year. This payment absorbed £408,182 (same) and after reserves of £525,000 as gainst £450,000, £259,125 was carried forward compared with £252,354 previously.

Ayer Hitam Earns Less, Pays Less.—A final dividend of 20 per cent has been recommended on the £180,000 issued capital in 5s. shares of Ayer Hitam Tin Dredging in respect of the year ended June 30, 1954. This dividend, which compares with a 10 per cent final in the previous year, together with the interims already paid, brings total distribution to 100 per cent compared with 110 per cent in respect of the preceding period.

Year to June 30	*Working Profit*	*Taxation*	*Net Profit*	*Dividends*		*To Reserve*
	£	£	£	£	%	£
1954	327,114	160,623	166,491	99,000	100	100,000
1953	533,251	270,039	263,212	106,650	110	150,000

Mr. G. W. Simms is chairman. Meeting, London, December 17.

Pahang Pays 15 Per Cent Less.—The recommendation of a final dividend of 30 per cent on the £375,000 issued ordinary capital in 5s. stock units of Pahang Consolidated brings the total distribution for the year ended July 31, 1954, to 40 per cent as compared with 55 per cent in the preceding year. A final dividend of 11½ per cent has also been recommended on the £100,000 7 per cent cumulative participating preference stock in £1 units bringing this total to 15 per cent; the same level as for the preceding year.

Year to July 31	*Total Revenue*	*Taxation*	*Net* Profit*	*Dividends*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1954	320,344	147,019	131,679	90,750	33,544	79,581
1953	613,475	313,575	226,222	121,687	94,661	69,707

* After depreciation of £41,646 (1953 - £73,678).

Mr. D. T. Lewis is chairman. Meeting, London, December 16.

Meru Tin Makes Loss.—Operations carried out by Meru Tin, the alluvial tin mining property in Perak, Malaya, resulted in a loss of £3,859 as compared with last year's profit of £8,586. Accordingly, the debit balance carried forward by the company was raised to £12,175 as compared with £5,803 for the preceding year. No dividend was recommended on the company's issued ordinary capital of £76,000 in shares of 1s. as compared with 2½ per cent previously. Mr. G. A. Williamson is chairman. Meeting, London, December 14.

Ribon and U-Tin's New Columbite Areas.—It has been announced by Ribon Valley (Nigeria) Tin Fields and United Tin Areas of Nigeria, both members of the 120 Group, that new columbite and tin-bearing areas have been acquired at Odegi in Nigeria. The new area comprises 101 acres of mining leases and 9 sq. miles under exclusive prospecting licences adjoining the companies' other areas at Odegi. Already over 160 tons of columbite have been proved on this latest acquisition and current prospecting shows good results. The proportionate interest of the two companies is one-third for Ribon and two-thirds for United Tin.

It is also reported from Ribon in connection with its Sabon Gida area, that arrangements have been completed with the designer of a plant utilizing a new and unique method for hydraulic underground mining in which the company as a 50 per cent interest in the patent rights. The plant is known as the " K.W. Underground and/or underwater mining plant " and an order for a first unit will be placed shortly. Every effort will be made to hold initial trials of the plant in Nigeria as early as possible in 1955.

Mining Men and Matters

Mr. H. C. Drayton has joined the board of Bibiani (1927) Ltd.

Mr. T. P. Stratten has been appointed Managing Director of Union Corporation Ltd. in place of the late Mr. P. M. Anderson. Mr. Stratten has also been appointed director of Bay Hall Trust.

Bayswater Metal Supply Co. has announced that as from December 1, their new address will be 34 Wood Lane, London, W.12. Telephone : SHE. 6429.

Mr. A. H. Pendree has been appointed General Sales Manager, and **Mr. M. S. Meyer**, Director of Sales of the Goodyear Tyre and Rubber Co. Inc.

The Mining and Metallurgical Society of America held a dinner and meting on Wednesday, November 17, at the Mining Club, 33 Broadway, New York City, at which Mr. Harold L. Talbot gave an address entitled " The Metallurgy of the Northern Rhodesian Ore Deposits."

GOLD COAST GOVERNMENT

VACANCY FOR DIAMOND DRILLER
GEOLOGICAL SURVEY DEPARTMENT

Applications are invited for one vacancy in the post of Diamond Driller Geological Survey Department.

Duties: To prospect mineral deposits, underground water supplies, foundations, etc., by diamond core drilling where the Director of Geological Survey may direct.

Qualifications: Candidates must have had at least 6 years responsible experience of diamond core drilling in connection with mineral deposit investigations in a wide variety of geological formations and must be capable of carrying out field repairs to the drilling plant and have sound mechanical and engineering know.edge and experience. He must be capable of keeping accurate drilling records.

Terms of Service: This post is a " Development Post " for implementation of specific projects under the Gold Coast Development Plan. The appointment will be on contract/gratuity terms for one tour of 18 to 24 months with a possible extension to two tours. Salary will be in the range £1,330 × £50—£1,680 per annum (consolidated) according to age, qua.ifications and experience. A gratuity at the rate of £37 10s. for each completed three months of satisfactory service will be payable on final termination of the contract.

Free passages on first appointment and on leave will be provided for the officer and his wife once each way during each tour of service. Officers will normally be required to travel by air. Free air passages will a.so be provided for a maximum of three children under 13 years of age.

Vacation leave with pay: seven days for each month of service. Free medical and dental attention provided for officer and family. Furnished quarters available at low rental. Income tax at local rates. Kit allowance on first appointment £30-£60 according to salary, provided no recent tropical experience.

Apply to the Adviser on Recruitment, Gold Coast Office, Melbourne House, Aldwych, London, W.C.2, giving full details of experience and previous employments.

POWELL DUFFRYN LIMITED

The Annual Accounts to March 31, 1954, were presented at the Annual General Meeting held on November 24. The following is an extract of the Statement of the Chairman—**Sir Herbert Merrett :—**

Negotiations with the Government under the Coal Industry Nationalisation Act have not yet reached conclusion. On the valuation of our mines, very litt.e remains to be done and I sha.l be disappointed if finality is not reached by the end of the current year.

There still remains, however, the settlement of compensation for the transfer of our Electricity Undertaking which has now been in the possession of the National Coal Board for nearly eight years. All attempts to arrive at a settlement by negotiation failed, and we have had to resort to the machinery of the Act by submitting our c.aim to the District Valuation Board.

At the last Annual General Meeting I said that the total compensation the Group would receive for their assets now vested in the N.C.B., would not be less than £15¼ million. While much must depend on the value finally attributed to our Electricity Undertaking, I am satisfied that the figure I gave is more likely to be an under-estimate than otherwise.

The statements issued to Stockholders deal fully with the change in your Company's investment in Vacuum Oil Company Ltd., and there is nothing I can add to the information already given.

A c.ose study is being made of the financial requirements of the several substantial undertakings which comprise the continuing working assets of the Powell Duffryn Company at home and abroad, but even after these have been provided for, there is likely to remain an available surplus which will be the subject of a scheme to be submitted to Stockholders when accurate figures are ascertainable.

GROUP ACTIVITIES

Our three main operating Companies are Stephenson Clarke Ltd., Cory Brothers and Co. Ltd. (with their numerous subsidiaries) and Cambrian Wagon and Engineering Co. Ltd.

The Inland trade of Stephenson Clarke Limited is maintained satisfactorily in volume, in profitability, and in service to its clientele. There have been additions to its fleet of coastal vessels, and a programme of new building is proceeding according to plan. Associated Coal and Wharf Companies Limited, one of the chief subsidiaries of Stephenson Clarke Limited, has had another successful year.

The numerous foreign Companies and overseas depots owned and controlled by Cory Brothers and Co. Ltd., although meeting with all the difficulties common to overseas operations, are nevertheless in general operating satisfactorily and, wherever possible, new business is being secured to make up for the loss of coal bunkering.

Our Cambrian Wagon and Engineering Works are turning out a larger and more varied output of steel wagons, mine cars and storage tanks than ever before, and we are well placed with orders for some time ahead.

Additionally, on the engineering side, the Rhymney Engineering Co. Ltd., which is owned and operated jointly with International Combustion (Holdings) Limited, continues to show improved output and profits.

As a result of modernisation, the Company's Pipe Works at Aberaman are producing increased outputs, and our Brick Works in the Aberdare Valley have been enlarged to meet greater demand.

POWELL DUFFRYN TECHNICAL SERVICES LIMITED

This Company has, for the last few years, been carrying out a considerable amount of exploratory work and investigation in various parts of the world. It has recently been successful in securing a contract of major importance in Korea through U.N.K.R.A., which is a branch of the United Nations Organization.

The contract involves the employment of a team of at least twelve of our technical mining experts, and is for a duration of about two and a half years, and possibly longer.

GROUP OIL BUSINESS GENERALLY

Our Barry storage, of a capacity of 120,000 tons, is working satisfactorily, and additional storage and handling have been secured during the year.

The new storage depot at Ipswich has been completed, and is trading profitably.

At Las Pa.mas, we have reached record figures of turnover, and at St. Vincent, the Company is making satisfactory profits.

The Report and Accounts were adopted.

JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY, LIMITED

(Incorporated in the Union of South Africa)

EXTRACT FROM THE SPEECH BY MR. KENNETH RICHARDSON AT THE ANNUAL GENERAL MEETING HELD AT JOHANNESBURG ON NOVEMBER 23, 1954

The issued share capital has been increased by one-third to £5,266,666 as a result of a new issue of shares in December, 1953. This issue was made at a price of 40s. per share, and, after allowing for expenses, brought in a sum of £2,553,797.

The primary purpose of this new issue of shares, as explained at the time, was to enable the Company to implement its guarantee of the loans of £1,500,000 made by De Beers Investment Trust, Limited to Freddies North Lease Area Limited, and Freddies South Lease Area, Limited, which loans were due for repayment not later than December 31, 1954, and which the two companies were not expected to be in a position to repay. It had also become clear that further amounts would be required to complete their development programmes, over and above the money provided by the loans of £500,000 per company from the National Finance Corporation of South Africa, which loans, too, were guaranteed by your Company.

After examining various methods for providing the additional funds required by the mining companies, the scheme of amalgamation referred to in the directors' report was decided upon as being the best means of consolidating the technical position of the two mines and easing their financial burdens, and, in addition, of providing the further finance required for their development programmes. This amalgamation has been completed and the benefits to the amalgamated company, Freddies Consolidated Mines, Limited, are being felt.

As already announced in the Press, our holding of 5 per cent. Unsecured Loan Stock of Freddies North and Freddies South was wholly converted into shares in those companies before the final conversion date, December 31, 1953. Prior to the scheme of amalgamation, we had advanced further sums of £250,000 to each of these companies to enable them to repay corresponding amounts to De Beers Investment Trust, Limited. The loans from your Company were thereby increased to £5,650,000, those from De Beers Investment Trust, Limited, were reduced to £1,000,000, and those from Anglo-American Corporation of South Africa Limited remained at £350,000. As part of the scheme of amalgamation, the whole amount of these loans, £7,000,000, was applied in subscribing for shares of Freddies Consolidated Mines, Limited, at 25s. per share.

Your Company has, therefore, no longer any obligations to De Beers Investment Trust, Limited under the guarantee to which I have referred, but continues its guarantee to the National Finance Corporation in respect of the loan of £1,000,000 assumed by Freddies Consolidated Mines, Limited upon amalgamation.

Following the recent offer of new shares to shareholders which was made by Freddies Consolidated Mines, Limited, we took up 1,072,202 new shares at 20s. each in that company. Together with Anglo American Corporation of South Africa Limited we had agreed to underwrite the whole of the new issue, but as approximately 96 per cent. of the shares offered were taken up by the shareholders of Freddies Consolidated Mines, Limited, our subscription for shares as underwriters was relatively small.

The final result of all the operations described was that we became holders of approximately 45 per cent. of the issued share capital of Freddies Consolidated Mines, Limited.

Turning to the profit and loss account, you will see that there is an increase of £72,504 in the profit before taxation. Allowing for dividends amounting to £203,000 received during the financial year 1953, but which related to the year before, the effective increase is £275,504 which arose wholly from the realization of investments.

The reduction in the charge for taxation is explained in the directors' report, but you will observe that the charge for Profits Tax has increased, owing to the larger dividend payment on the capital as increased by the new issue of shares already referred to.

It is gratifying to note that, notwithstanding the large amount of £1,100,000 which has been transferred to Investment Reserve, in order to replace the amount of £1,078,710 drawn from that reserve in respect of adjustments of investment values, it has been possible to maintain the rate of dividend on the increased capital.

THE GOLD MINING INDUSTRY

There have been welcome improvements in the results obtained by the mines of the gold mining industry during the last twelve months. In August, 1954, the tonnage milled reached the figure of 5,388,000 tons, which is the highest figure achieved since October, 1942. It was incidentally, in July, 1942, that the all-time record of 5,820,000 tons per month was achieved. Revenue earned by the gold mines during July of this year was the highest that had ever been received, and that figure has been improved upon in each succeeding month. The profitability per ton milled has also shown satisfying advances during recent months.

These figures have been achieved despite the continued increase in working costs and can be attributed mainly to the higher production from the mines of the Orange Free State, the Far West Rand and the Klerksdorp Area. The potential value of these fields has now been clearly demonstrated and operations therein will continue to expand over a period of many years before reaching a peak of production, both of gold and of uranium.

INCREASED REVENUE FROM URANIUM OXIDE

In addition to its record earnings from gold in recent months, the industry is also receiving a steadily increasing revenue from the production of uranium oxide. During the nine months ended September 30, 1954, declared profits from this source amounted to £5,600,000, as compared with £1,800,000 for the whole of 1953. There are at present seven mines producing uranium, that is, less than one-third of those which have so far been accepted as producers. Bearing in mind that some of these seven mines are not yet operating at their full rate of production, the increasingly important part which uranium is now playing, and will continue to play in the earning capacity of the gold mining industry, will be readily appreciated.

As I remarked earlier, the record levels of net revenue have been attained in the face of increasing working costs. Working costs of the Free State mines averaged 49s. 9d. per ton milled for the quarter ended September 30, 1954, and improvements in the costs per ton will undoubtedly be felt in this field as production reaches more normal levels, but it must be expected that costs will always be higher in the Orange Free State than on the Witwatersrand. Against this it must be noted that for the quarter ended September 30, 1954, the average yield per ton of the Orange Free State mines was 5.04 pennyweights, as compared with 3.99 pennyweights for the established mines of the Witwatersrand. Some of the richer mines of the Orange Free State are still in the initial stages of production and it seems clear that the yield per ton milled by the Orange Free State Mines will be materially higher than that being obtained on the Witwatersrand.

The shortage of Native labour continues, but an appreciable improvement has been evident since the beginning of 1954.

The public transport services continues to be inadequate to meet the heavy and vital demands of the gold mining industry, to which have recently been added the requirements of the operating uranium plants, with the result that the provision of essential supplies of coal, lime, cement, timber and other commodities has on occasions reached dangerously low levels. It is appreciated that the tonnage carried by the South African Railways has increased from 36,000,000 tons in 1938 to 71,000,000 tons in 1954, but praiseworthy as this considerable increase may be, the present position is grave in the extreme and only the most energetic efforts of the Railway Administration, and bold forward planning, will save the industrial output of the Union from material damage.

DIAMOND SALES

Although diamond sales at £61,100,000 for 1953 did not reach the record level of the previous year, this figure has been bettered only during 1951 and 1952. During the nine months ended September 30, 1954, sales amounted to £46,089,000, compared with £45,587,000 for the same period in 1953, and the figures for 1954, therefore, promise well to be maintained at a high level.

Copper prices have shown a strong upward trend in recent months and at the end of October, 1954, the settlement prices on the London Metal Exchange were £285 and £263 per ton for "cash" and "three months" copper respectively, compared with the prices at the end of October, 1953, of £242 10s. 0d. per ton for "cash" copper and £223 10s. 0d. per ton for "three months" copper. The current prices are no doubt inflated by the effects of strikes which have occurred in the United States of America and Chile, but present indications are that the demand for copper is likely to remain satisfactory for some time to come. The output from the operating mines in Northern Rhodesia continues to increase, while the new mines, Bancroft and Chibuluma, are expected to be in production within the next few years.

The tonnage sold by the coal mining companies of the Group for the year to June 30, 1954, was 1,876,000, which reflects a slight reduction on last year's figure.

BLYVOORUITZICHT GOLD MINING CO. LTD.

At the seventeenth Annual Meeting of shareholders held in Johannesburg on November 16, 1954, **Mr. W. M. Frames,** the Chairman, in the course of his remarks said:

As in recent years, your mine again suffered from an inadequate supply of underground labour, which was common to the entire gold mining industry, and in consequence it operated at a level considerably below capacity. This was reflected in a further small contraction in the tonnage milled which, together with the lower yield, the decrease in the additional revenue from sales of gold at enhanced prices and higher working costs, was responsible for the sharp fall of £734,000 in the working profit derived from gold mining, which for the year totalled £5,628,412. This decline, however, was balanced by an increase of £732,000 in the estimated working profit from uranium production which amounted to £753,819, and the total working profit was virtually unchanged at £6,382,231.

Despite the restricting influence of the labour shortage and delays caused by the necessity for cementation treatment of water-bearing fissures, it was nevertheless possible to increase the total development footage accomplished during the year. Development on reef, however, which included an appreciable amount in the form of winzing from the bottom levels, declined by 1,591 ft. This, coupled with the lower percentage payability of the ore opened up in the extreme western portion of the mine, was the reason for the payable ore developed, 876,000 tons, being less by 286,000 tons than that for the previous year.

In reef driving on the 9th level at A1 Sub-incline Shaft the high values encountered in the contiguous areas were fully maintained; good values were also disclosed in an increased amount of reef winzing from the bottom levels between A4 Sub-incline Shaft and the eastern boundary of the property. In the extreme western portion of the mine, however, values continued to be well below the average for the whole mine. Reef winzing will be continued, wherever possible, in order to expedite lateral development from the sub-incline shafts and will be extended to the west of A4 Sub-incline Shaft.

With regard to sub-incline shafts, while the rate of sinking in A1 and A3 was disappointing owing to water control problems, satisfactory progress was made with the sinking and equipping of A2 and with the initial sinking of A4. The installation of the air filter plant on the 6th level, No. 1 Shaft, was completed during the year and in consequence it was possible to accelerate driving of the twin haulages south from No. 1 Shaft towards the first of the proposed sub-vertical shafts near the southern boundary of the lease area.

Operations at the uranium plant progressed satisfactorily but, owing to certain plant and process problems, full capacity was not attained until shortly after the close of the financial year when final installations to improve the performance of the plant were completed. For the purposes of the sale and loan arrangements, however, the plant has been rated at full capacity with effect from January 1, 1954, and the agreed ten-year period of production runs from that date. A further £346,713 was expended during the year, bringing the total to £3,875,909, and it is now estimated that the final cost of the plant will be in the region of £4,068,000, inclusive of interest on the loans. Repayment of the initial loan as it stood at the end of 1953, together with interest, has commenced and will continue over the ten-year period, 1954/63 inclusive, at the rate of £111,085 per quarter. This fixed quarterly instalment will be increased when repayment of the additional loan commences at the end of the first quarter of 1955.

Investigations into the question of erecting a plant on the company's property to produce sulphuric acid have indicated that such an installation would be warranted. An application has accordingly been submitted to the Atomic Energy Board for permission to enter this field and for loan funds to meet the capital cost of the project, estimated at about £430,000.

In view of its importance bearing on the company's financial position and its dividend policy, I think I should again draw attention to the effect which the heavy capital expenditure in post-war years has had on the amounts of taxation and lease consideration which the company has been called upon to pay. Shareholders are no doubt aware that for taxation purposes an allowance is made, calculated at the rate of 27½ per cent per annum, on the unamortized balance of capital expenditure, there being no distinction between expenditure relating to gold and uranium production. Due to the substantial capital expenditure incurred on the uranium project over the past four financial years, the redemption allowance has increased considerably and thereby has reduced the company's taxable income. Since the uranium programme has virtually been completed.

The Report and Accounts were adopted.

HARMONY GOLD MINING CO. LTD.

At the fourth Annual Meeting of shareholders held in Johannesburg on November 15, **Mr. P. H. Anderson,** the Chairman, in the course of his remarks, said:

Development operations proceeded at a satisfactory rate, particularly as No. 3 shaft had not yet been commissioned and the hoisting facilities at the temporarily equipped Ventilation Shaft were, and will of necessity remain, limited. It has also been necessary to concentrate on footwall haulages and on stope preparation at the expense of reef development, particularly during the latter part of the year under review and since then. 8,804 ft. were advanced on the Basal Reef horizon during the year and of this 8,495 ft. were sampled proving 97 per cent payable at 635 in. dwt. over a channel width of 44 in.

During the first four months of the current financial year 1,375 ft. have been sampled proving 88 per cent payable at 593 in. dwt. This recent decrease in percentage payability and inch pennyweight value, is due to the fact that during August of this year a large proportion of the small footage of reef development accomplished was in 6 South Drive which traversed a localized erosion channel in which the top portion of the Basal Reef had been eroded subsequent to deposition.

Total reef development to the end of October has been 11,789 ft., of which 11,375 ft. has been sampled yielding the following results: Payable 10,730 ft., or 94 per cent, at an average value of 13.9 dwt. over a channel width of 46 in., equal to 641 in. dwt.

The drilling of borehole L.R.9, some 5,500 ft. north-north-west of No. 3 Shaft, to ascertain the local geological features in the area where the proposed No. 2 Shaft will be sunk, was completed in November, 1953, and while it indicated that no abnormal difficulties should be encountered by sinking the shaft in this locality, it also revealed, from assays of the three intersections of the Basal Reef at 5,028 ft., an average value of 1,302 in. dwt. This high value conforms fairly closely with those obtained in earlier drilling in this particular area, and the east-west line of four boreholes down dip from H3 borehole over a distance of more than 7,000 ft. have averaged 1,350 in. dwt. The indications as to the average values of the Basal Reef in the centre portion of the property are therefore particularly encouraging.

The Ventilation Shaft and No. 3 Shaft were connected underground during November, 1953.

During December, 1953, No. 3 Shaft attained its final depth of 5,380ft. and a compressor of 25,000 cu. ft. per minute capacity was commissioned. Permanent rock hoisting operations became available in August.

Initial testing of the first unit of the reduction plant was commenced in June, and with the commissioning at the end of August of No. 3 Shaft, which is the main hoisting shaft, it became possible to go to production in September this year. 40,000 tons were milled in that month, and in October the rate of milling was increased to 45,000 tons, which is the nominal rated capacity of the existing plant.

Construction of the second unit of the reduction plant is well up to schedule, and it is hoped that it will be brought into commission during the course of the first half of 1955. The Uranium plant, which is being erected to treat the slimes residue from these two 45,000-ton units of the gold plant, is making fairly satisfactory progress and should commence operations early in 1955.

I think that it will be appreciated from what I have said so far that, provided everything continues to go according to plan, the Harmony mine is scheduled to be in production on the basis of a rated milling capacity of 90,000 tons per month by soon after the middle of 1955; that is in about five years from the commencement of shaft sinking in August, 1950, the initial gold production stage at 45,000 tons per month having been attained in four years from the commencement of shaft sinking.

The immediate removal of the shaft pillar enables stoping to commence much earlier because this can be undertaken in the immediate vicinity of the shaft instead of waiting until enough development work has been undertaken to enable stopes to be opened up further afield.

The company's total estimated loan requirements are now as follows:

	£
Uranium Plant	3,400,000
Proposed Pyrite Plant	500,000
Covertible Notes outstanding at 31/10/54	2,050,000
Short-term facilities, as above	750,000
	6,700,000

The report and accounts were adopted and the ordinary resolution increasing the Directors' borrowing powers from £6,000,000 to £7,000,000 was carried unanimously.

CONSOLIDATED MAIN REEF MINES AND ESTATE, LTD.

At the fifty-sixth Annual Meeting of shareholders held in Johannesburg on November 16, 1954, **Mr. N. W. S. Lewin,** the Chairman, in the course of his remarks said :

The profit after taxation for the year under review at £300,007 was some £4,300 less than in the previous year. A decline of some £60,000 in working profit, which was more than accounted for by the fal.ing away of revenue from sales of gold at enhanced prices, was to a large extent offset by a decrease of £51,000 in the provision for taxation. After allowing for the £218,330 in dividends, we were able to show a net cash surplus at the end of the year of £16,353, to which was added cash assets totalling £400,080, together bringing the balance of Income and Expenditure Account to £416,433, as shown in the Balance Sheet.

Although the tonnage milled declined by 4 per cent, it has, during the four months since the close of the year, been running in advance of the rate for the corresponding period last year. Whether this improvement will continue must, as you will appreciate, depend to a large extent upon the labour situation. In so far as Non-European labour is concerned, the seasonal decline in supply that normally takes place during the spring and early summer months may cause a reduction in the monthly tonnages milled, but thereafter the situation will, we trust, improve. Unfortunately the position in regard to the shortage of European underground employees remains acute and is a continual source of anxiety.

In the last four months of the financial year our monthly profits rose appreciably. This was principally due to the higher tonnage treated as a result of more abundant supplies of native labour and the consequent reduction in unit working costs. I am glad to say that so far this year we have been able to maintain relatively satisfactory monthly results, but we, like all other mining companies in South Africa, are faced with a further rise in working costs due to the recent increased railway charges and the probability that power charges will also be raised.

As you know, development has been confined almost entirely to secondary or internal work during the last year, but primary development on Bird and Kimberley reefs continues in those areas that your company intends tributing from Crown Mines. The latest information I can give you is that there are reasonable prospects of getting a limited tonnage of payable, though not rich, ore from the Crown Mines' claims.

The Report and Accounts were adopted.

DIVIDENDS

Consolidated Goldfields of South Africa 17½% (December 14)
Electrolytic Zinc Co. of Australasia 35% (December 3)
Emperor Mines 1s. (December 15)
General Mining and Finance 10% *i* (December 4)
Goldfields Rhodesian Development 5% (December 2)
Great Boulder Proprietary Gold 6d. *i* (December 15)
Harrisons and Crossfield 16% (December 14)
Imperial Chemical Industries 4% *i* (December 1)
Lake View Investment Trust 5% *i* (December 1)
Messina (Transvaal) Development 220% (December 9)
Pahang Consolidated 30% (December 18)
Zinc Investments 2½% (December 10)

i interim

KOLAR GOLD MINING COMPANIES

(MYSORE, CHAMPION REEF, OOREGUM, NUNDYDROOG)

At the Annual General Meetings of the above named companies and at the extraordinary general meeting of the Ooregum Company, held at Ooregaum, Mysore State, on November 11, 1954, **Mr. Arthur H. E. Taylor,** Vice-Chairman, presided. The results and accounts for the year ended December 31, 1953, were considered. The following dividends have been paid: Mysore 4½ per cent, Champion Reef Nil, Ooregum Nil, Nundydroog 4½ per cent.

The decline in production of the Champion Reef Company's subsidiary, the Champion Reef KGF Company, during 1953 coupled with the lower price received for gold resulted in the big reduction in the KGF Company's revenue and the fall in profits for that year in consequence of which the directors of that company were unable to recommend a dividend. The Chairman expressed the hope that the promise of better financial results of the KGF Company for the current year would enable dividend payments to be resumed.

The Ooregum KGF Company hoped to complete the clean-up by the end of March next when consideration would be given to putting the KGF Company into liquidation. While it was apparent that the Ooregum KGF Company would have a surplus of assets over liabilities it was still not possible to give an estimate of what would be receivable by the Ooregum Holding Company on the liquidation of the KGF Company. At the extraordinary general meeting held after the annual general meeting a special resolution to put the company into voluntary liquidation and to appoint a liquidator was duly passed.

At each of the meetings of the Mysore, Champion Reef and Nundydroog Companies the Chairman expressed pleasure in reporting that the production of the respective KGF Company for the first 10 months of 1954 compared favourably with the production during the corresponding period in the previous year. Unfortunately as a result of a fire which broke out in the Nundydroog Mine on September 27, 1954, output from that mine since that date had been affected.

At the meeting of the Mysore Company, Mr. Taylor said that the expectation that the KGF Company would be able to dispense with the financial support of this company in the early part of 1954 had been realized. The necessary steps preliminary to liquidation and distribution of assets were begun early this year and the Exchange Control Authority in India had given consent to the Company's proposal to distribute the shares of the KGF Company to the stockholders of this Company. The Chairman said that the directors will proceed with liquidation as soon as they are satisfied that stockholders' interests have been protected and will spare no efforts to achieve this.

At the meeting of the Nundydroog Company Mr. Taylor said that the Nundydroog KGF Company's financial position was steadily improving and as soon as the directors were satisfied that they could do so without jeopardising the position of the KGF Company, proposals will be placed before the shareholders to put this company into liquidation.

The Report and Accounts for the four Companies were adopted.

WILFLEY

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ROAN ANTELOPE COPPER MINES LIMITED

(Incorporated in Northern Rhodesia)

The following is an abridgment of the Statement dated November 8, 1954, by the Chairman (**Mr. R. L. Prain, O.B.E.**) circulated to the members :

PRODUCTION AND COSTS

During the year a total of over 5.3 million tons of diluted ore was hoisted and milled. The resulting copper production was 88,678 tons. Our costs of making and delivering blister to overseas buyers amount to just on £120 a ton, while similar costs for electrolytic copper are just under £137 per ton.

FINANCIAL

The average realization price for the year was £229 19s. 6d. per ton. The profit was £9,036,563 and taxes for the year £3,308,000. £1,000,000 has been transferred to Replacements Reserve and £750,000 to General Reserve. Your Directors have recommended a final distribution of 2s. 6d. per share (less taxes) making a total distribution for the year of 3s. 6d. per share (less taxes).

REFINERY

Last March we announced the decision to construct an electrolytic refinery at Ndola to be owned and operated by a subsidiary to be known as Ndola Copper Refineries Limited. Last September we made the further announcement that the capital of this new Company would be found as to two-thirds by your Company and one-third by British Insulated Callender's Cables Limited of England.

Initially this refinery will have a capacity of 60,000 tons of copper a year with provision for 110/120,000 tons copper a year, which would be in excess of Roan's production as at present foreseen. For this reason it would be desirable that Ndola Copper Refineries Limited should be partially a customs refinery, that is to say, treating copper for other parties, and for this reason it is important that it should be located on the line of rail. This accounts partly for our decision to locate it at Ndola. We were also influenced by the fact that we were able to conclude satisfactory arrangements with the Ndola Municipality for the provision of housing and amenities for both our European and African staff in Ndola.

LABOUR

The most important of the discussions with the various employee organizations were those on the subject of African Advancement. These discussions broke down on July 24 and Government promptly appointed a Board of Inquiry under the Chairmanship of Sir John Forster, K.B.E., Q.C. The Report of this Board was published on October 19. The Board found *inter alia* that advancement of the African into the field of European employment was made impossible by Clause 42 of the current Agreement between the Companies and the European Union without that Union's consent. It also came to the conclusion that to achieve a reasonable degree of advancement some fragmentation of European jobs would be necessary and that such fragmented jobs should be remunerated at lower rates related to the African wage structure. The Board recommended that the Companies and the European Union should apply themselves promptly to the solution of this problem "which has been outstanding far too long and the settlement of which at a very early date we regard as imperative."

The Copperbelt Companies accepted the conclusions of this independent report and invited the European union to resume discussions. These were resumed on November 3. At the resumed discussions the Union stated that they were unable to agree to continue negotiations on the basis of the conclusions of the Forster Report. Since the Companies had already accepted these conclusions a deadlock was thus reached and in these circumstances your Board has seen no alternative but to give the Union six months' notice of termination of the existing agreement as provided under Clause 45 thereof. At the same time the Company has invited the Union to open discussions with the object of concluding a fresh agreement whose terms, while safe-guarding fully the legitimate interests of members of the Union, will permit the satisfaction of the reasonable aspirations of the Company's African employees. There the matter stands at the time of this Statement going to press.

COPPER MARKET

The price of copper has shown strength throughout the past year, due partly to some curtailment of production in the U.S.A. and Chile. In recent months the price has shown even greater strength due to strikes in the U.S.A. and Chile. Stockpile buying in the U.S.A. has also served to maintain the strong undertone. Your company's production for the current financial year is virtually all placed.

RHODESIAN SELECTION TRUST LIMITED

(Incorporated in Northern Rhodesia)

The following is an abridgment of the statement dated November 8, 1954, by the Chairman (**Mr. R. L. Prain, O.B.E.**) circulated to the members :

The present interests of your Company include not only a holding of 64.07 per cent in Mufulira Copper Mines Limited, but the same per centage of holding in Chibuluma Mines Limited, Baluba Mines Limited, Chambishi Mines Limited and 100 per cent holding of the ordinary share capital of Rhodesian Selection Trust (Services) Limited. It may be appropriate, therefore, to add a word of explanation about the present position and future prospects for these investments.

MUFULIRA

The Mufulira investment needs little introduction. For many years our Annual Report has included the full accounts, Directors' Report and Chairman's Statement of the Mufulira Company. Mufulira is one of the great copper mines of the world, with relatively high grade and long life.

OTHER PROPERTIES

The Chibuluma Mine is a relatively small but high grade copper/cobalt property now being brought into production at a cost estimated at £6.000,000, of which £5,000.000 is being provided by the United States Government, to be repaid in metals in due course.

The Baluba Company owns an orebody estimated at present to contain 70,000,000 tons of sulphide ore, running 2.68 per cent copper and 0.18 per cent cobalt. About two years ago the question of opening up this property was under active investigation by the Board of its then owners, Mufulira, and extensive negotiations took place with the United States Government. It was with regret that the Mufulira Board announced about a year ago that, for various reasons which were outlined in the Chairman's speech that year, it was impossible at that time to proceed with the development of this orebody.

The Chambishi Company owns the Chambishi orebodies which were discovered many years ago and to-day publish ore reserves amounting to 25,000.000 tons containing 3.46 per cent copper. This is potentially another big mine of the future.

Rhodesian Selection Trust (Services) was established in 1951 to provide administrative managerial, technical and other services to all the Companies in the Rhodesian Selection Trust Group, and in this capacity is fulfilling a most useful function.

COMMITMENTS

Your Board feels that, in view of the position I have described above, the Company should accumulate somewhat larger balances of cash than have been held in the past. This would enable the Company to meet any commitments that, for instance, the Baluba and Chambishi Companies, both of which conduct some exploration work, may call upon their Shareholders to provide. For this reason, as I explain later, some part of this year's income has been withheld. Before passing to the financial results of the year. I should mention for the sake of completeness that the Mufulira Company in turn is a shareholder in several large exploration companies, for which R.S.T. (Services) is conducting the work, and thus your Company retains an interest in any new developments that may occur in these fields.

FINANCIAL AND NEW ISSUE

The ordinary interim dividend, and the final dividend, if approved, of the Mufulira Company this year will give us an income of £2,447.000. After adding the carry forward from the previous year, and deducting our expenses, there has remained a sum of £2,471,000 available for distribution. Your Board has already paid out of this an interim dividend of 1s. per share (less taxes) costing £662,000 and now recommends a final dividend of 2s. 6d. per share (less taxes) costing £1,654.000. This will have the effect of bringing the carry forward up to £155.000 and the free cash in the Company will now be about £297,000.

The Mufulira Company has recently announced that it is raising £2.000.000 of new money by making a new issue to its Shareholders. This means that your Company, to retain its equity in Mufulira, will have to take up its proportion of the new issue, at a cost of approximately £1.250.000. As this is obviously impossible to do without our making a new issue ourselves, we have announced an offer of new shares to our Shareholders. The American Metal Company Limited of New York, which holds 50.61 per cent of the shares in this Company, has indicated that it will apply for its rights firm, an action which is greatly appreciated by your Board. The balance of the issue will be offered to the remaining 8,300 Shareholders, and has been underwritten by Selection Trust Limited, London.

MUFULIRA COPPER MINES LIMITED

(Incorporated in Northern Rhodesia)

The following is an abridgment of the Statement dated November 8, 1954, by the Chairman (**Mr. R. L. Prain, O.B.E.**) circulated to the members :

PRODUCTION AND COSTS

During the year a total of over 3,600,000 tons of diluted ore was hoisted and milled, with a recoverable copper content equivalent to 88,719 long tons of blister. The output of saleable products for the year was 36,061 tons of blister copper, 36,388 tons of electrolytic cathodes produced at Mufulira, and 17,721 tons of electrolytic copper shapes refined abroad.

FINANCIAL

Our average realization price for the year was £229 17s. 3d. per ton. The profit was £9,663,931 and on this figure the taxes due for the year amount to £3,543,000. From the resulting net profit £1,250,000 has been transferred to Replacements and £1,050,000 to General Reserve. Your Directors have recommended a final distribution of 11s. (less taxes) making a total distribution for the year of 15s. per share (less taxes).

SALE OF PROPERTIES

Your Board has for some time had under consideration the question of disposing of certain of the outside mining properties which have for long been held by Mufulira. These properties are either new or potential mines, and your Board has felt that it is preferable that these should not continue to be owned by Mufulira, which is itself a mining company, but should be sold to the Shareholders of Mufulira. Accordingly, in May this year, companies were formed known as Baluba Mines Limited and Chambishi Mines Limited, and these Companies, together with Chibuluma, were then sold to the Shareholders for considerations equal in the case of Baluba and Chambishi to the amounts spent by Mufulira on these properties, and in the case of Chibuluma to the par value of its issued shares.

CASH POSITION

Your Board has for some time past been giving consideration to the cash-requirements of the Company. It is obvious that the financial effort involved in paying for the refinery out of profits, together with the large programme of replacements on hand and contemplated, has seriously strained the cash position of the Company. Accordingly, your Board applied to the Capital Issues Committee in England for permission to raise £2,000,000 of new money by making an offer of shares to the Company's Shareholders. The Capital Issues Committee have agreed to this issue being made and Shareholders will be receiving a notice dealing with this new issue at the same time as this statement.

LABOUR

The most important of the discussions with the various employee organizations were those of the four-party discussions on the subject of African Advancement. These discussions broke down on July 24, and Government promptly appointed a Board of Inquiry under the Chairmanship of Sir John Forster, K.B.E., Q.C. The Report of this Board was published on October 19. The Board found inter alia that advancement of the African into the field of European employment was made impossible by Clause 42 of the current Agreement between the Companies and the European Union without that Union's consent. It also came to the conclusion that to achieve a reasonable degree of advancement some fragmentation of European jobs would be necessary and that such fragmented jobs should be remunerated at lower rates related to the African wage structure. The Board recommended that the Companies and the European Union should apply themselves promptly to the solution of this problem " which has been outstanding for too long and the settlement of which at a very early date we regard as imperative."

The Copperbelt Companies accepted the conclusions of this independent report and invited the European Union to resume discussions. These were resumed on November 3. At the resumed discussions the Union stated that they were unable to agree to continue negotiations on the basis of the conclusions of the Forster Report. Since the Companies had already accepted these conclusions a deadlock was thus reached, and in these circumstances your Board has seen no alternative but to give the Union six months notice of termination of the existing agreement as provided under Clause 45 thereof. At the same time the Company has invited the Union to open discussions with the object of concluding a fresh agreement, whose terms, while safeguarding fully the legitimate interests of members of the Union, will permit the satisfaction of the reasonable aspirations of the Company's African employees. There the matter stands at the time of this Statement going to press.

THE CEMENTATION COMPANY

The 34th annual general meeting of The Cementation Company Ltd. will be held on December 16 in London.

The following is an extract from the statement by the chairman, **Mr. A. R. Neelands,** circulated with the report and accounts for the year to March 31, 1954 :

The amount of the trading profit, which includes interest on investments shown in this year's consolidated profit and loss account, is £610,131, an improvement of some £72,000 on last year's similar figure. This is after writing off £254,950 for depreciation on fixed assets, for which the figure for last year was £242,509. Taxation this year has increased to £387,283. I commented on the burden of taxation last year and there is no point in repeating my remarks. It is encouraging that some relief is to be expected in future from the cessation of the excess profits levy which this year amounted to £40,000 for three quarters of the year on increased profits as compared with £58,000 for the previous full financial year.

The greater part of the profits of subsidiary companies have been invested in the companies and therefore £200,000 from these accumulated profits, as shown in the profit and loss account, has been transferred to general reserve. It is proposed that in addition to the dividends already paid on the Cumulative Preference Stocks a dividend of 17½ per cent less tax should be paid on the Ordinary Stock.

Early in the present financial year we issued £750,000, 5½ per cent Unsecured Loan Stock repayable 1965/70 at a premium of 1 per cent, repaying the existing unsecured loan of £600,000. In addition to increasing substantially our credit facilities, the operation materially extends the period during which repayment must be made.

As you are aware, we have had provision of further capital in mind for some time and the Board now feels confident that fresh capital could be beneficially employed and a detailed proposal for increasing both the authorized and issued capital is being submitted to Stockholders in a separate circular.

Turning now to our Subsidiary Companies, Cementation (Contracts) Limited is responsible for the major portion of our turnover. The Mining Department of this company had all its plant and men employed throughout the year on work for the National Coal Board at home. Mine sinking and development work continued in Turkey.

The sinking being carried out by a German shaft sinking contracting company in Wales continues to receive a good deal of publicity in the daily Press due, presumably, to the novelty of Germans working in this country as there is nothing else that is noteworthy about it. Our own sinkings do not get the same publicity. We have received a number of enquiries from Stockholders and I want to take this opportunity of assuring you generally with regard to the efforts of our German visitors that nothing published in this connection indicates any superiority of method or performance to those in use in this country.

Cementation (Contracts) Limited are responsible for our work in the Far and Near East as well as at home. In the Middle East an interesting contract was secured at Dokan in Iraq. This is a cementation contract in which the Colcrete process is being used and which will rival in value and importance the very similar work which we carried out at Camarasa in Spain many years ago.

At Sukkur in Pakistan the original contract was extended. Dam prestressing contract at Tansa in the Bombay Province demonstrated precision and economy of the method devised by Mon. Coyne, the Consulting Engineer for these works.

The Cementation Co. (Africa) (Pty.) Ltd., which has been operating there since 1916, has had a record year, and there is little reason to doubt that it will continue for some time as one of our strongest Subsidiaries.

In Canada our contract on Niagara Falls Power Project continued and on the well-known uranium mine at El Dorado deep workings required the use of high-pressure cementation.

Contracts through our Canadian Company in Brazil for the Brazilian Traction Light and Power Company continued.

John Thom Limited is primarily concerned with both mineral drilling and well drilling. Their turnover is well maintained and their technical results were again excellent, with maximum core recovery verticality and successful deviation when required.

Cementation (Muffelite) Limited carried out major contracts in connection with test tunnels and a number of minor contracts for the prevention of noise and vibration generally.

Cia. Espanola de Cimentaciones y Sondeos, S.A., have again increased their turnover and profit. We have under consideration an increase of capital for this company.

The Parent Company of the Geophysical Group has now reached the profit-earning stage with a modest trading profit.

RHODESIAN ANGLO AMERICAN LIMITED

(Incorporated in Northern Rhodesia)

Abridged Report of the Directors for the year ended June 30th, 1954

FINANCE AND ACCOUNTS

Investments.—Investments in Subsidiaries are unchanged, but Investments in Other Companies show an increase of £350,000, mainly on account of the subscription during the year of shares in Bancroft Mines Limited and of further shares in Wankie Colliery Company Limited.

Profits.—The Company's income for the year includes for the first time certain dividends received under deduction of Rhodesian tax; certain other dividends previously paid under deduction of British tax were received without any tax deduction.

The net profit for the year, after taxation, was	£5,104,539
Profits unappropriated at July 1, 1953, were	624,829
Making a total available of	5,729,368
The interim dividend of 1s. 6d. (net) per 10s. unit of Stock paid on May 13, 1954, and the recommended final dividend of 6s. 0d. (net) per unit will absorb	4,818,750
Leaving Unappropriated Profits of	£910,618

Deduction of Rhodesian Tax from Dividends.—Companies incorporated in the Federation of Rhodesia and Nyasaland have a right, in terms of Federal and Territorial tax legislation, to deduct Rhodesian tax from dividend payments. The right extended initially to Federal Income Tax only, but from a later date the Surcharges levied by the constituent Territories have also been deductible. Since becoming locally incorporated in May, 1954, the Company and its subsidiary and associated companies have exercised these rights, as it is considered in the general interests of members to do so. A large part of the Company's dividend income for the year has therefore been received after deduction of Rhodesian tax—although these dividends are included in the accounts at their net amounts. Similarly, the interim dividend paid by the Company in May, of 1s. 6d. (net) per unit, was expressed on payment as a gross dividend of 2s. 4.8d. per unit, less Federal Income Tax at 7s. 6d. in the £; the recommended final dividend of 6s. 0d. (net) per unit will, if approved, be expressed as a gross dividend of 9s. 7.2d. per unit, less Federal Income Tax at 6s. 3d. in the £ and Northern Rhodesia Territorial Surcharge at 1s. 3d. in the £. The fact that Rhodesian tax is shown as a "deduction" on the dividend warrants has no effect on the net amounts paid by the Company or on the amounts received by individual stockholders. Refunds of the Federal Income Tax deducted can be claimed in appropriate circumstances by members resident in the Federation; refunds of Territorial Surcharge can be claimed by members resident in Northern Rhodesia.

INVESTMENTS IN SUBSIDIARY COMPANIES

RHOKANA CORPORATION LIMITED.—Capital.—The Company's holding in Rhokana remains at £1,285,123 Ordinary Stock and £24,777 "A" Stock, and represents 52.396 per cent of the £2,500,002 Ordinary and "A" Stock in issue.

Accounts.—The net profit for the year, after taxation, including a special dividend of £465,342 (net) from Mufulira Copper Mines Limited and a transfer of £400,000 from Sales Equalization Reserve, was £9,944,021 (as against £8,391,027 for the previous year).

Copper Production.—The total output of Blister and Electrolytic Copper was 79,755 long tons, against 74,216 long tons in the previous year. The London Metal Exchange reopened for dealings in copper on August 5, 1953. Prices were initially considerably below the last United Kingdom controlled price of £252 per ton, the August average for prompt copper being £227 per ton. Thereafter prices showed a generally upward tendency, and the average for prompt copper in June, 1954, was £239 per ton.

Cobalt Production.—The year's production of electrolytic Cobalt metal, in the form of cathodes, was 693 short tons compared with 259 tons produced in the previous year. In addition, 571 short tons of Cobalt contained in alloy and electrolytic slimes were produced as against 486 short tons in the previous year. The overall increase in production has been disposed of without difficulty.

NCHANGA CONSOLIDATED COPPER MINES LIMITED.—Capital.—The Company's holding remains at £1,490,581 Stock representing 21.29 per cent of the £7,000,000 Stock in issue. The Company's interest directly and indirectly (through Rhokana) in Nchanga's issued capital is 38.92 per cent.

Accounts.—The net profit for the year ended March 31, 1954, after taxation, was £8,842,547 (against £8,748,525 for the preceding year) to which the following special credits were added:—From Sales Equalization Reserve £750,000; Amounts over-provided for taxation on profits of earlier years £547,604, making a total available profit for the year of £10,140,151.

Copper Production.—Production of Blister and Electrolytic Copper totalled 115,137 long tons, compared with 93,317 long tons the previous year.

RHODESIA COPPER REFINERIES LIMITED.—The Company has no direct holding in the Refinery Company though it controls the latter indirectly through Rhokana and Nchanga. The net profit, after taxation, was £108,743 against £91,324 for the preceding year. The production of Electrolytic Copper was 127,479 long tons compared with 111,576 long tons for the previous year.

OTHER INVESTMENTS

BANCROFT MINES LIMITED.—The Company's holding in Bancroft Mines is £81,457 Stock representing 1.63 per cent of the £5,000,000 Stock in issue. The Company's interest, direct and through Rhokana, in Bancroft amounts to 26.63 per cent of the issued capital. Good progress is being made with the opening up of the mine and with the provision of the necessary treatment plant, ancillary services and housing. It is expected that the mine will begin production early in 1957 and that later that year it will attain the full planned rate of production of approximately 43,000 long tons of copper per annum. The present construction programme is expected to cost approximately £12,000,000, of which £6,000,000 was provided by last year's share issue, and a further £3,000,000 will be provided by an issue of 5 per cent Notes, repayable 1958/61, which Rhokana Corporation has undertaken to subscribe or find subscribers for.

MUFULIRA COPPER MINES LIMITED.—The Company's holding in the Mufulira Company remained at 294,242 shares of £1 each. The accounts include net dividends from Mufulira amounting in total to £177,214. A final dividend for the year to June 30, 1954, of 6s. 10½d. (net) per share has recently been recommended by the Mufulira Board, and this will appear in the Company's accounts for the current financial year. The Company acquired from Mufulira at par 36,100 £1 shares in Chibuluma Mines Limited and subscribed at par for 7,942 £1 shares in Baluba Mines Limited and 19,133 £1 shares in Chambishi Mines Limited. Production at Chibuluma is scheduled to begin towards the end of 1955, and to reach the rate of about 16,000 long tons of copper and 500,000 lb. of cobalt a year. The Baluba and Chambishi properties are known to contain copper orebodies of considerable potential value but the formation of these companies does not imply that it is intended to develop the properties in the near future.

RHODESIAN ALLOYS LIMITED.—The Company increased its holding in Rhodesian Alloys Limited to 199,196 shares of £1 each by the subscription at par of a further 19,196 shares. Rhodesian Alloys has established a plant at Gwelo, Southern Rhodesia, for the production of ferrochrome and began operations in April, 1954.

TANGANYIKA CONCESSIONS LIMITED.—The Company holds 220,807 stock units of 10s. each in the above Company. A final dividend of 3s. 6d. (net) per unit in respect of the year to July 31, 1953, and an interim dividend of 1s. (net) per unit in respect of the year to July 31, 1954, have been included in the income shown in the accounts.

THE RHODESIA BROKEN HILL DEVELOPMENT COMPANY LIMITED.—The Company's holding in the Broken Hill Company is £353,176 Stock. The accounts for the year to December 31, 1953, showed a profit, after taxation, of £876,896—against £1,791,364 for 1952—out of which dividends totalling 1s. (net) per 5s. stock unit were paid, compared with 2s. (net) per unit for the previous year. The reduction in profit is a direct reflection of the considerably lower prices ruling for lead and zinc during 1953.

WANKIE COLLIERY COMPANY LIMITED.—The Company's holding in the Wankie Company was increased from 800,000 to 1,066,666 shares of 10s. each by subscription at par for 266,666 additional shares. A dividend of 6d. (net) per share for the year to August 31, 1953—on 800,000 shares—has been included in the Company's income for the year under review.

REINCORPORATION

The Company and its associates became incorporated in Northern Rhodesia on May 11, 1954.

COPIES OF THE ANNUAL REPORT AND ACCOUNTS MAY BE OBTAINED FROM THE HEAD OFFICE, SALISBURY, SOUTHERN RHODESIA, OR FROM THE TRANSFER OFFICES AT KITWE, NORTHERN RHODESIA; 44 MAIN STREET, JOHANNESBURG, AND 11 OLD JEWRY, LONDON, E.C.2.

RHOKANA CORPORATION LIMITED

(Incorporated in Northern Rhodesia)

SIR ERNEST OPPENHEIMER'S STATEMENT

The following is from the Statement by the Chairman, Sir **Ernest Oppenheimer,** circulated with the Annual Report and Accounts for the year ended June 30, 1954:

The results for the year to June 30, 1954, show a continuance of the rising trend of income in recent years. Net profits have risen from £6.7 million in 1950-51 to £7.8 million in 1951-52, £8.4 million in 1952-53, and now to over £9.5 million in 1953-54. The 1954 profit includes, however, a special dividend of £465,000 from Mufulira Copper Mines Limited which should be disregarded for purposes of comparison.

Very nearly the whole of the increase results from the receipt of larger dividends from the Company's shareholdings in the Nchanga and Mufulira companies. The net dividends from these sources totalled nearly £3.7 million in the year to June, 1954—or £3.2 million if the special Mufulira dividend is excluded; in 1950-51 dividends amounted to only £1.2 million, and the totals for the intervening years were: 1951-52—£1.6 million; 1952-53—£2.2 million. The Company's investment activities are clearly becoming of major importance. The Company's profits from its own production of copper and cobalt have been as follows: 1950-51—£5.5 million; 1951-52—£6.2 million; 1952-53—£6.2 million; 1953-54—£5.9 million.

RECORD ORE TONNAGE

During the year production was curtailed by fuel shortages but the tonnages of both copper and cobalt produced nevertheless showed satisfactory increases. The tonnage of ore hoisted, at well over four million tons, was half a million tons higher than in the previous year, and set a new record for the Company. Despite this high rate of mining, ore reserves have not been correspondingly reduced, as a roughly equivalent tonnage of additional ore has been established by further diamond drilling.

The proved ore reserves at Nkana and Mindola in 1931, before mining began, were estimated at 127 million tons. Ore extracted up to the end of June, 1954, totalled over 65 million tons, and allowing for ore left in pillars, or irrecoverable for other reasons, the total depletion of reserves has been in the neighbourhood of 85 million tons. Ore reserves at June 30 last were, however, not 42 million but over 96 million tons, because additions to reserves over the years, arising either in the course of mining or as a result of further exploratory drilling from surface, have amounted to about 54 million tons. Most of the additional tonnage has been proved in recent years: it is mainly in the deeper levels of the mine and, though generally of somewhat lower grade than the average mined hitherto, it is well above the economic limit.

Cobalt metal production showed a particularly satisfactory increase last year, from 259 tons to 693 tons. Cobalt's contribution to the Company's income, already considerable, may confidently be expected to increase in future.

INCREASING IMPORTANCE OF INVESTMENTS

I mentioned earlier that the Company's investment activities were becoming of increasing importance. First in order of importance are its holdings in two producing mines—Nchanga and Mufulira—from which the Company last year derived over one-third of its net profits after tax. Then there are holdings in two developing mines—Bancroft and Chibuluma—on which construction work is actively in progress with a view to early production. In a third category are the Baluba and Chambishi Companies, which were formed during the year to take over mineral rights from Mufulira.

Nchanga Consolidated Copper Mines Limited has established itself as one of the world's largest copper producers. Its output is now about 110,000 long tons of copper a year.

Mufulira Copper Mines Limited has been producing for nearly 20 years at an average rate of about 70,000 tons of copper a year. In the year to June 30 last production reached a new high level of 87,972 long tons.

Your Company now has a direct holding in Chibuluma Mines Limited. The Chibuluma Company is developing a small but high-grade copper/cobalt deposit a few miles to the west of Nkana and should come into production towards the end of next year.

BANCROFT'S CAPITAL EXPENDITURE PROGRAMME

The most important recent investment has been in Bancroft Mines Limited. The Company subscribed 47.7 per cent of the initial £6,000,000 raised by Bancroft by issue of shares. Rapid progress is being made with construction and there is every expectation that production will begin in 1957. The capital expenditure involved will be of the order of £12,000,000 and in addition to its share subscription your Company has recently undertaken to provide Bancroft with £3,000,000 by subscribing or securing subscribers for 5 per cent Notes to that amount, repayable 1958/61; Bancroft is therefore already assured of three-quarters of the funds required to complete its initial construction programme.

Rhokana Corporation is one of the most important commercial units in the new Federation of Rhodesia and Nyasaland, and the future of the one is inextricably bound up with the future of the other. In differing degrees they will both be confronted with difficult practical problems and political issues and it is in the interests of both that wise European leadership and imaginative planning shou.d be applied to ensuring the well-being of industry and individuals alike in the Federal Territories. I am confident that the right men and the right methods are and will continue to be available to deal with the tasks that lie ahead.

Copies of the Annual Report and Accounts may be obtained from the Head Office, Kitwe, or from the transfer offices at 44 Main Street, Johannesburg, and 11 Old Jewry, London, E.C.2.

CORRECTION TO RAND AND O.F.S. QUARTERLY ANALYSIS TABLE

As the result of a correction to the recent quarterly report for Daggafontein Gold Mine published by the Anglo American Corporation of South Africa, (see *Mining Journal*, November 12, p. 562) one or two alterations must be made to our quarterly analysis table of Rand and O.F.S. results. This table was published in supplement form on October 29 and showed net profit after tax for Daggafontein at £2,148.4, a figure which now becomes £1,564.3. In consequence earnings per share in the first nine months of the company's present financial year fall to 4s. 6d. from the previous figure of 6s. 2d.

GOLD COAST GOVERNMENT

VACANCY FOR CHEMIST-ASSAYER
GEOLOGICAL SURVEY DEPARTMENT

Applications are invited for one vacancy in the post of Chemist-Assayer in the Geological Survey Department.

Duties: To assay ore of all kinds and carry out silicate analyses of rocks and minerals as directed and to participate in research in the inter-relation of Gold Coast rocks and in geochemistry.

Qualifications: The candidate should have an Honours or Special Degree in Chemistry and at least two years' post graduate experience in silicate analysis and assaying.

Terms of Service: This post is a "Development Post" for implementation of specific projects under the Gold Coast Development Plan. The appointment will be on contract/gratuity terms for one tour of 18 to 24 months with a possible extension to two tours. Salary will be in the range of £990 x £50—£1,490 : £1,530 x £60—£1,950 per annum (consolidated) according to age, qualifications and experience. A gratuity at the rate of £37 10s. (or £25, salary less than £1,000) for each completed three months of satisfactory service will be payable on final termination of the contract.

Free passages on first appointment and on leave will be provided for the officer and his wife once each way during each tour of service. Officers will normally be required to travel by air. Free air passages will also be provided for a maximum of 3 children under 13 years of age.

Vacation leave with pay: seven days for each month of service. Free medical and dental attention provided for officer and family. Furnished quarters available at low rental. Income tax at local rates. Kit allowance on first appointment £30-£60 according to salary, provided no recent tropical experience.

Candidates should apply to the Adviser on Recruitment, Gold Coast Office, Melbourne House, Aldwych, London, W.C.2, for a form of application.

THE RENONG TIN DREDGING COMPANY, LIMITED

EXCEPTIONAL VALUES ENCOUNTERED

SIR JOHN HAY ON CURRENT PROSPECTS

The forty-first annual general meeting of The Renong Tin Dredging Company, Limited, will be held on December 13, 1954, at 52/54 Gracechurch Street, London, E.C.3.

The following is the statement by the Chairman, **Sir John Hay :**

Our largest dredge being throughout the year in course of reconstruction at Jinjang, production was again dependent on the operations of No. 2 Dredge at Rasa, supplemented in the latter half of the period by small returns from No. 3 Dredge. Tin ore recovered totalled 1,106 tons, of which No. 2 was responsible for no less than 967 tons, against 350 tons which it produced in the previous year. This tonnage represents the remarkable yield of 30.16 oz. per cubic yard dredged and contrasts with 13.25 oz. for 1952/53, and 15.35 oz. for 1951/52. The dredge worked across the submerged township of Kuala Kubu, under which the tin ore deposits were virgin and undisturbed, whereas the flats outside the town area in which we normally operate had had the "eyes" picked out by surface and pit miners of previous generations. Owing to the necessity for breaking through buried masonry, buildings, roadways, a railway embankment and other obstructions, wear and tear on the dredge was heavy, which, however, was happily rewarded by the high yields obtained. A miscellaneous assortment of debris and bric-a-brac was brought up by the buckets, but nothing of archeological interest such as a Mithras Temple, was brought to light. London in this respect has the limelight, but no mineral deposits. The dredge has now worked almost clear of the old town area and yields in future are likely to revert to the normal outputs of the years 1951/53.

Recommissioning of No. 3 Dredge to treat ground previously dredged is, as I stated last year, an experiment. We can only take short-term views of the prospects, but to date operations in this area have been profitable.

Reconstruction of Gombak Dredge at Jinjang was completed in June this year, almost precisely on timetable; only minor adjustments have been found necessary since operations started. The dredge has now been working for five months. So far, recoveries have actually exceeded estimates, but stiff clay has proved somewhat more intractable to treat than was anticipated, and this has slowed down yardage with an adverse effect on costs, but as experience is gathered and countermeasures devised, improvement should follow. On the whole a promising and encouraging start has been made in this new venture.

ACCOUNTS

After a period of declining prices in tin, a gradual recovery set in shortly after the beginning of our financial year and reached its peak in April last. Proceeds of tin ore sales averaged £477 per ton against the previous year's figure of £637 per ton. The increase in output, however, outweighed the effect of the lower price and profit before tax amounted to £258,438 compared with £88,870 recorded for 1952/53. From these earnings, £154,507 has been set aside for British and Malayan Income Taxes and British Profits Tax, but I should mention that Malayan Tin Duty amounting to £80,573 is charged before the foregoing figure of Profit is struck. The total of taxes paid or to which we are liable amount, therefore, to £235,080.

We have strengthened Contingencies Reserve by appropriating £40,000 from the balance at Profit and Loss Account and we recommend a Final Dividend, less tax, of 30 per cent on the Ordinary Stock, making 45 per cent for the year. This is the highest distribution recommended in the forty-one years' history of the Company.

I informed you in my last address that after the close of the year then under review, the final dividend on our War Damage Award had been declared. This payment, since received, together with £12,820 charged in Appropriation Account, has enabled us to extinguish Rehabilitation Loan Account and Mine Rehabilitation Expenditure Account from the Balance Sheet. We have also written off the balance of Rasa Property Account—£6,000. Whilst the foregoing items are written out of the Balance Sheet, our new venture at Jinjang is brought in. Jinjang, as you have already been informed, is not our own property but is owned by Straits Tinfields Ltd. with whom, on the basis of the particulars set out in circular letter to Stockholders dated July 9, 1953, we have come to an arrangement whereby the area will be worked by our Gombak Dredge. No Capital Account is created in respect of this venture. Our financial obligation is represented by the advance of £204,167 now shown in the Balance Sheet. This advance is part of the agreed conditions and terms made with Straits Tinfields Ltd. for the working of the joint venture. Reimbursement is provided for by half-yearly instalments.

We welcome Sir Ewen Fergusson to the Board as representative of Straits Tinfields Ltd. His appointment will come up for confirmation at the Annual General Meeting.

CURRENT PROSPECTS

Production for the four completed months of the current year to date, including our equivalent share of returns from Jinjang, amounts to 404.65 tons of tin ore. I must say frankly that this exceeds our anticipations and I do not expect that such a high rate can be maintained throughout the year. Predictions in respect of mining activities are notoriously risky. I therefore make no forecast, but advise Stockholders to temper any optimism derived from these returns with caution.

There is also a new factor which may affect future results. I refer to the International Tin Regulation Agreement which, though still subject to formal ratification has already been approved by the majority of representatives of Governments involved. If and when regulation comes into operation a compulsory cut in production may be enforced. Whether a higher price, which the sponsors of the scheme expect to follow, would compensate for the consequential addition to production costs, is dubious.

We are served in the East by an efficient and resourceful staff. The results at Rasa were not due solely to the exceptional values encountered. The hazards of dredging were unusual and credit must be given to the competence and sound judgment of Mr. M. E. Lawler, the Mine Superintendent, and to the skill and enthusiasm of the Dredge-Masters, Engineers and Crews. Rasa is a recognized danger area, and precautions cannot be relaxed. Nevertheless, those who serve us there have not been deflected from the performance of their duties and following this excellent example, labour remained tranquil and settled. This is a high tribute to the management. A similar standard applies to our Gombak unit, now re-established at Jinjang. It is an outstanding achievement that despite the conditions prevailing in Malaya, the formidable and complicated floating machine that constitutes our Gombak Dredge should have been removed piece by piece, reconstructed, and put to work again on a new site in twelve months without a serious hitch. In supervising this operation as well as the opening up and initial development works at Jinjang, Mr. W. Findlay, the Mine Superintendent, has done well indeed. Mr. Findlay retires from our service next March, and I am sure he will carry with him the thanks and esteem of Stockholders as well as of the Board. I must also record our appreciation of the special services rendered by our Consulting Engineers, Messrs. Vallentine and Dunne, and of the overall surveillance, help and advice of our Agents in the East, Messrs. Guthrie and Co. Ltd.

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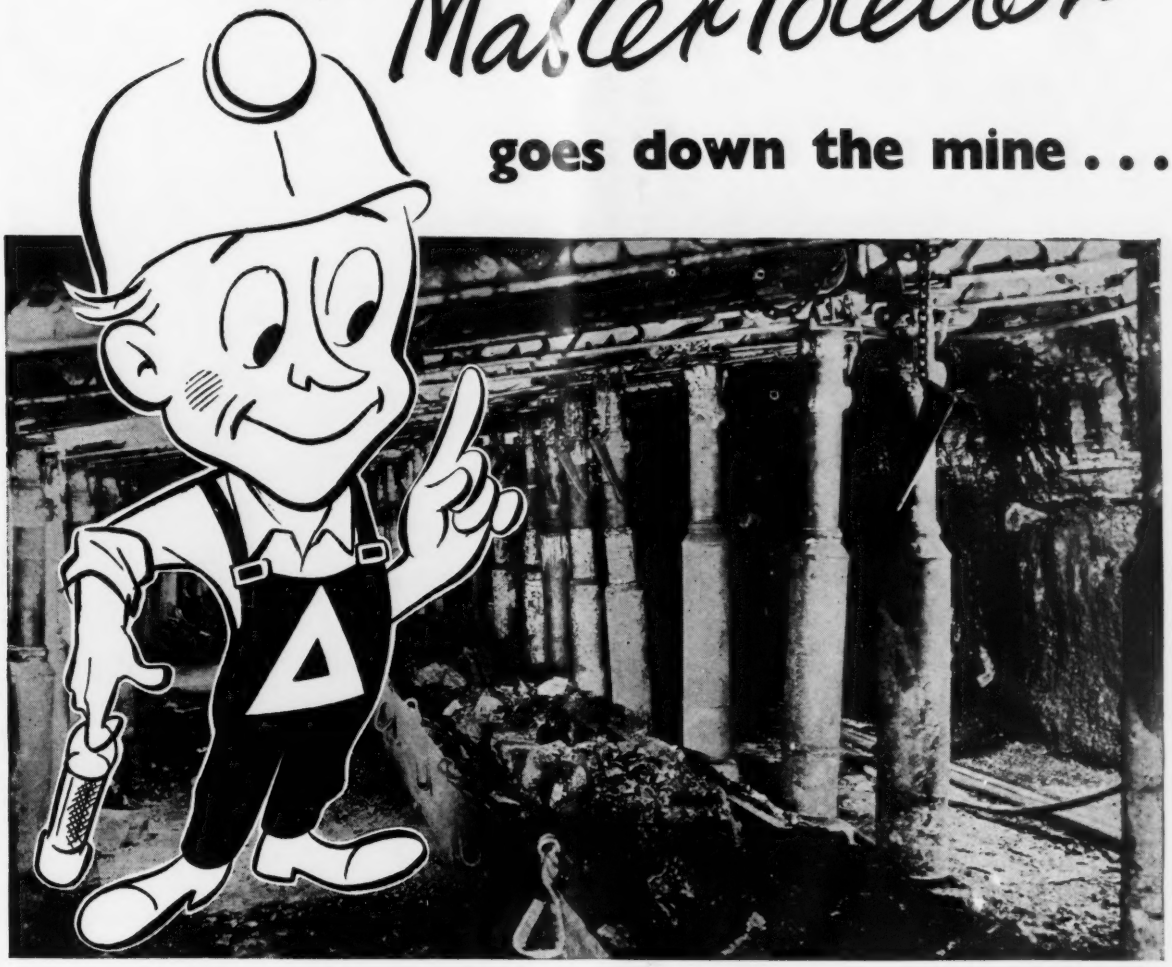

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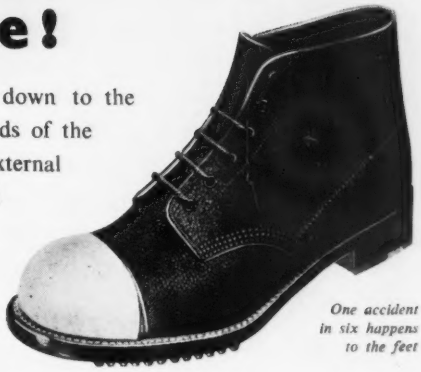

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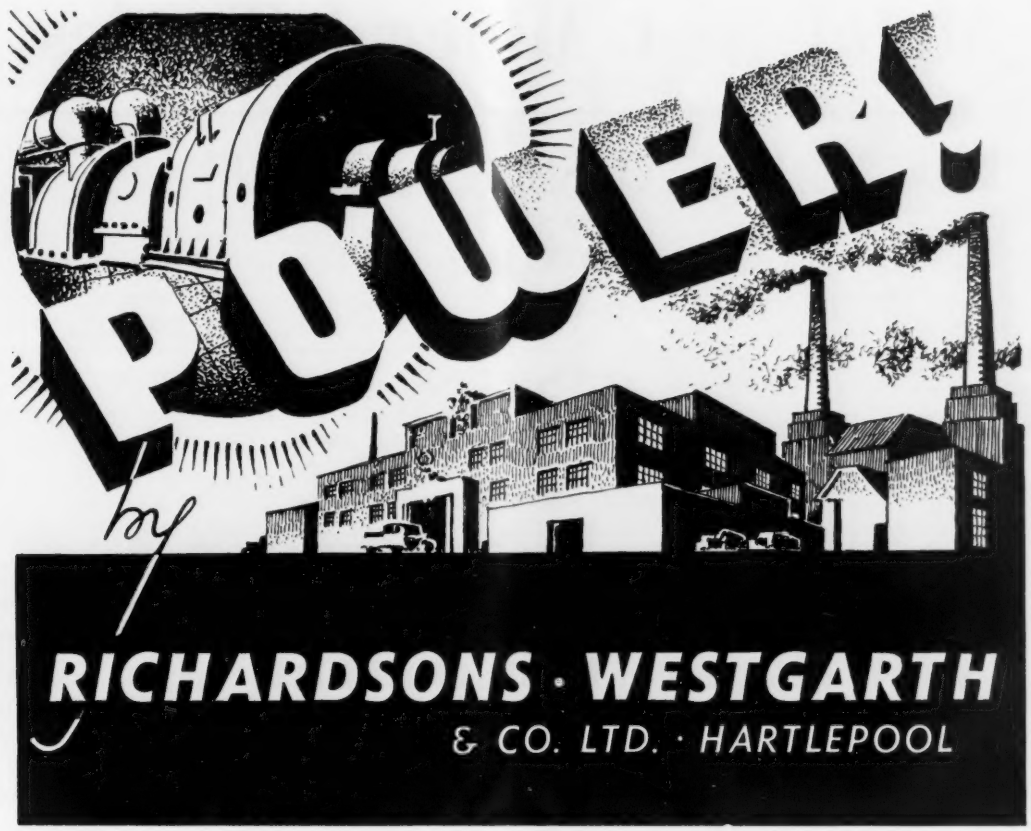

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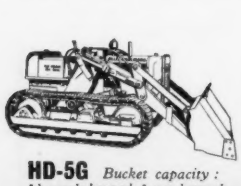

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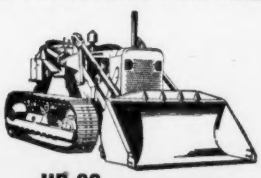

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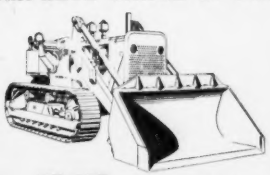

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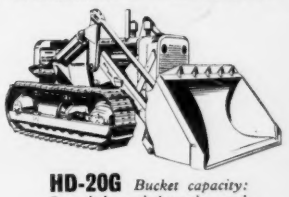

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